



PROPOSED
LIVESTOCK GRAZING
MANAGEMENT

for the

**CAL - NEVA
PLANNING UNIT**

Draft Environmental Impact Statement

United States Department of the Interior
Bureau of Land Management
California

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United States Department of the Interior

BUREAU OF LAND MANAGEMENT
District Office
P. O. Box 1090
Susanville, California
96130

IN REPLY REFER TO
1792 (C-020)
Cal-Neva

Dear Reviewer:

Enclosed for your review and comment is the draft environmental impact statement prepared on the Proposed Domestic Livestock Grazing Management Program for the Cal-Neva Planning Unit of northeastern Lassen County, California, and northwestern Washoe County, Nevada, within the Susanville BLM District.

The statement was prepared pursuant to Section 102(2)(C) of the National Environmental Policy Act of 1969. It is based on information from the Bureau of Land Management and other sources, including Federal, State, and local agencies, and interested private organizations and citizens.

Comments on the environmental impact statement should be received by this office no later than _____ to be considered in the final statement. Your comments should be returned to:

District Manager
Bureau of Land Management
P. O. Box 1090
Susanville, California 96130

Sincerely yours,

C. Rex Cleary
C. Rex Cleary
District Manager

Enclosure





United States Department of the Interior

BUREAU OF LAND MANAGEMENT

District Office
P.O. Box 1090
Susanville, California
96130

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The manner of presentation of material within this document differs from that used in previous BLM Environmental Impact Statements. Information and analysis is presented in outline form rather than narrative form. This has resulted in a document which we feel is both clearer and more concise than earlier EISs, allowing easier identification of and greater emphasis on those issues which have been identified as being of concern to the public. We would appreciate your comments on the effectiveness of this approach.

Comments on the environmental impact statement should be reviewed by this office no later than _____ to be considered in the final statement. Your comments should be returned to:

District Manager
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P.O. Box 1090
Susanville, California 96130

Sincerely yours,

C. Rex Cleary
District Manager

Enclosure



Save Energy and You Serve America!

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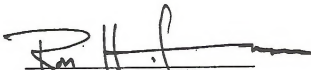
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Draft Environmental Impact Statement

PROPOSED DOMESTIC LIVESTOCK GRAZING MANAGEMENT PROGRAM
FOR THE CAL-NEVA PLANNING UNIT
LASSEN COUNTY, CALIFORNIA AND WASHOE COUNTY, NEVADA

Prepared by
Department of the Interior
Bureau of Land Management
Susanville District

The Bureau of Land Management proposes to implement a livestock grazing program on 642,851 acres of public land in the Cal-Neva Planning Unit of northeastern California and northwestern Nevada. The overall objectives are to improve vegetation condition and increase forage production for multiple use on a sustained-yield basis. Components of the five alternative plans include: (1) adjustments of authorized livestock use; (2) introduction of grazing systems, and (3) range improvements including vegetation manipulation and construction of reservoirs, fences, pipelines, wells, spring developments, and water tanks and troughs. Environmental consequences of each of the alternatives are described in an introductory summary and in Chapter 3 of the EIS.


ASST. STATE DIRECTOR
CALIFORNIA STATE OFFICE

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Dates by which comments are due:

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This EIS examines 5 Alternatives. . . .

- A. Proposed Action
- B. Decreased Livestock Use
- C. Increased Livestock Use
- D. No Action
- E. No Grazing

Dealing with 5 issues. . . .

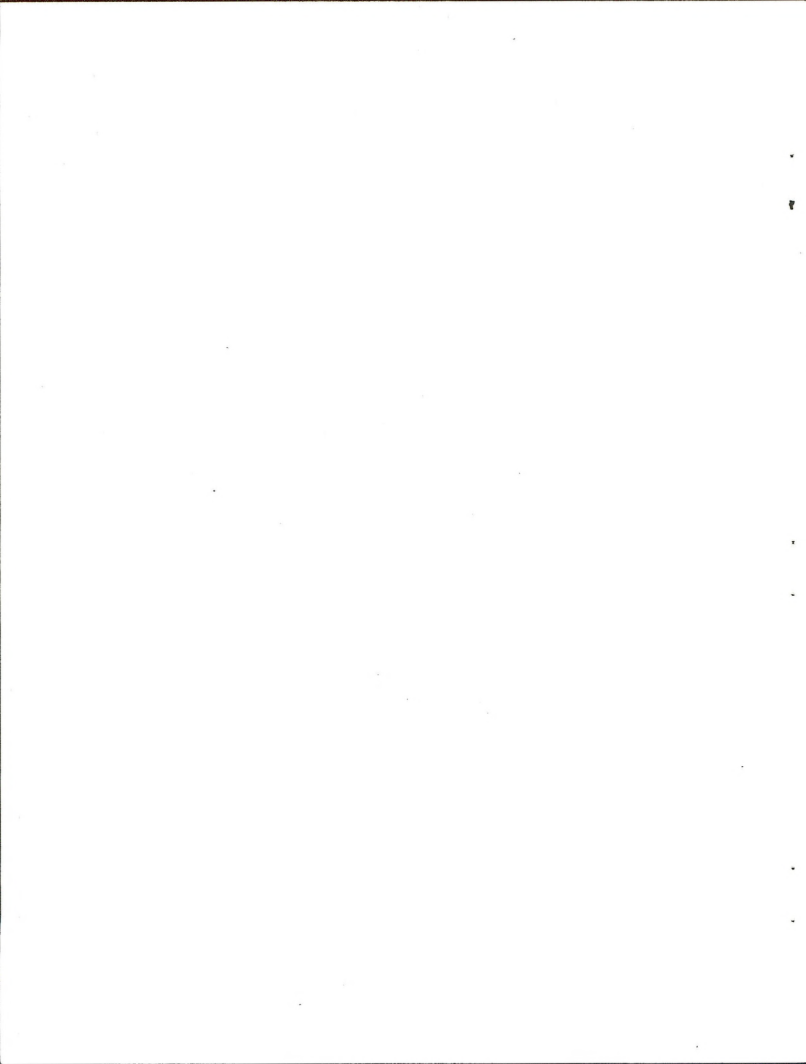
- 1. Competition for forage (Livestock vs. Wild Horses/Burros vs. Wildlife)
- 2. Restrictions on Range Developments in WSAs.
- 3. Possible economic losses to ranchers.
- 4. Fencing in wild horses/burros.
- 5. Destruction of cultural resources.

Concerning Livestock Grazing. . . .

- 1. On 642,581 acres
- 2. In the Susanville District, Cal-Neva Planning Unit, BLM.

General Land Use Goals are. . . .

- 1. Improve range conditions
 - poor --> fair
 - fair --> good
- 2. Increase deer/antelope populations $\rightarrow$
 - 13,000 deer
 - 2,000 antelope
- 3. Protect cultural and wilderness resources.
- 4. Maintain healthy horse herds.
- 5. Minimize economic ~~disruption~~ ^{disruption}.



ALTERNATIVES & IMPACTS

Proposed Action

AMPS
 Maintain 1 (7,000 acres)
 Develop 7 (635,000 acres)
 Run-RIP 1 (500 acres)

Forage Allocations (AUMs)
 Livestock 30,000
 Wild Horses 8,200
 Wildlife 4,600

Range Developments
 Seeding 15,000 acres
 Fences 120 miles
 Pipelines 10 miles
 Waters 27
 Cattleguards 6

Decreased Livestock Use

AMPS
 Same as Proposed Action

Forage Allocations (AUMs)
 Livestock 30,000
 Wild Horses 12,000
 Wildlife 4,600

Range Developments
 Fences 94 miles
 Waters 24
 Cattleguards 4

Increased Livestock Use

AMPS
 Same as Proposed Action

Forage Allocations (AUMs)
 Livestock 48,000
 Wild Horses 8,200
 Wildlife 4,600

Range Developments
 Same as Proposed Action

No Action

AMPS
 Maintain 1

Forage Allocations
 Livestock 31,000
 Wild Horses 8,200
 Wildlife 4,600

Range Developments
 None

No Grazing

No AMPS
 Forage Allocation
 Wild Horses 12,000
 Wildlife 4,600

No Range Developments

Its Impacts

Range/Habitat Condition - Improved
 Poor 216,000
 Fair 194,000
 Good 232,000

Forage Production - Increased
 20%

Wildlife Populations - Up
 13,000 Deer
 2,000 Antelope

Wilderness Study Areas
 No unnecessary undue degradation.
 All Suitable.

Economics
 No adverse impacts

Wild Horses
 Population down 800 horses
 Population down 100 burros

Cultural Resources
 Slowed rate of degradation.

Its Impacts

Range/Habitat Condition - Improved
 Poor 219,000
 Fair 204,000
 Good 219,000

Forage Production - Increased
 10%

Wildlife Populations - Up
 13,000 Deer
 2,000 Antelope.

Wilderness Study Areas
 No unnecessary undue degradation.
 All Suitable.

Economics
 \$256,000 lost annually.
 7 operators severely affected.

Wild Horses
 Population down 600 horses
 Population down 50 burros

Cultural Resources
 Decreases % attrition rate.

Its Impacts

Range/Habitat Condition - Decrease
 Poor --- 352,000
 Fair --- 234,000
 Good --- 57,000

Forage Production - Down
 -2%

Wildlife Populations - Down
 9,000 Deer
 1,400 Antelope

Wilderness Study Areas
 No unnecessary undue degradation
 All suitable

Economics
 \$343,000 increase in revenue

Wild Horses
 Action
 Same as Proposed

Cultural Resources
 Increased rate of attrition

Its Impacts

Range/Habitat Condition - Decrease
 Poor --- 309,000
 Fair --- 295,000
 Good --- 39,000

Forage Production
 No Change

Wildlife Populations
 No Change

Wilderness Study Areas
 No Change

Economics
 No Change

Wild Horses
 No Change

Cultural Resources
 Slight Decrease

Its Impacts

Range/Habitat Condition - Improve
 Poor --- 203,000
 Fair --- 200,000
 Good --- 240,000

Forage Production - Increase
 +8%

Wildlife Populations
 Same as Proposed Action

Wilderness Study Areas
 No unnecessary undue degradation
 All Suitable

Economics
 \$752,000 Annual Loss

Wild Horses
 Population same as Decreased Livestock Use

Cultural Resources
 Great decrease in attrition rate.

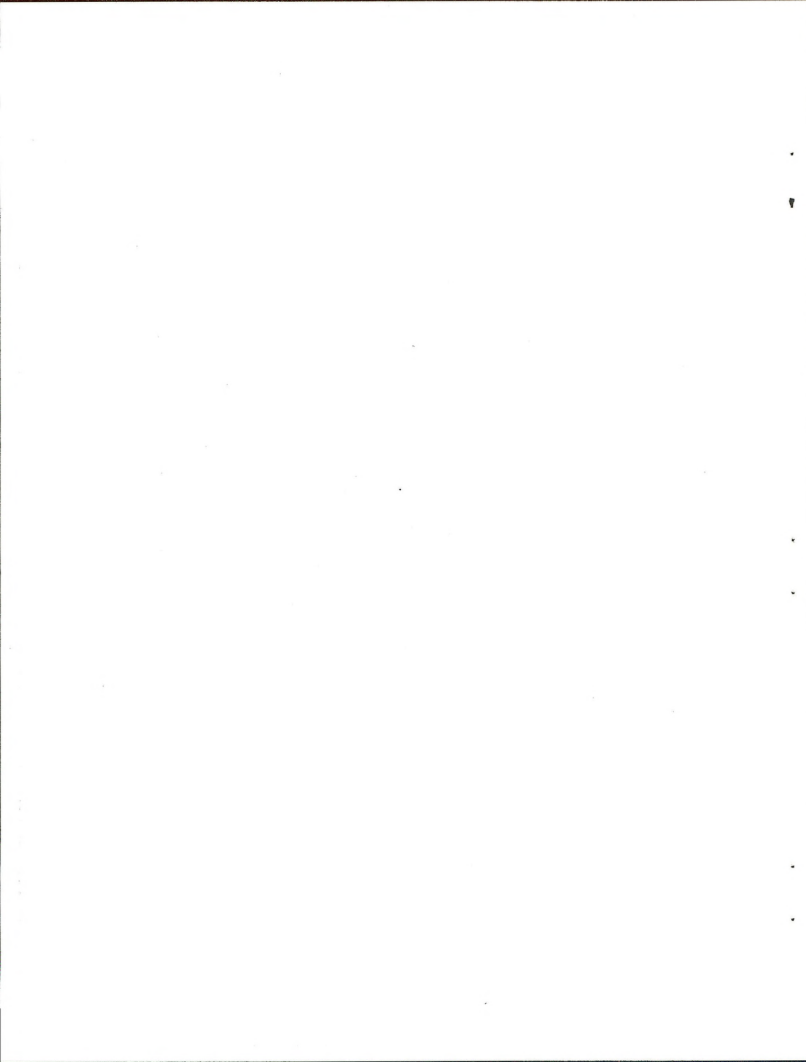


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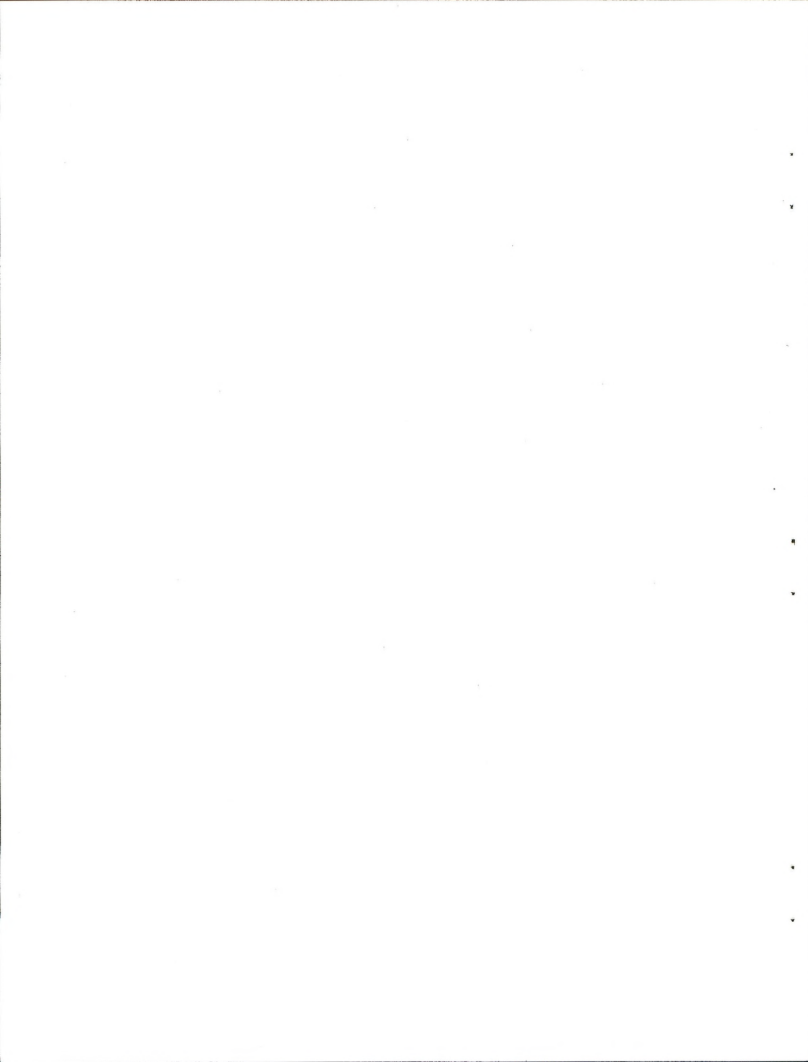
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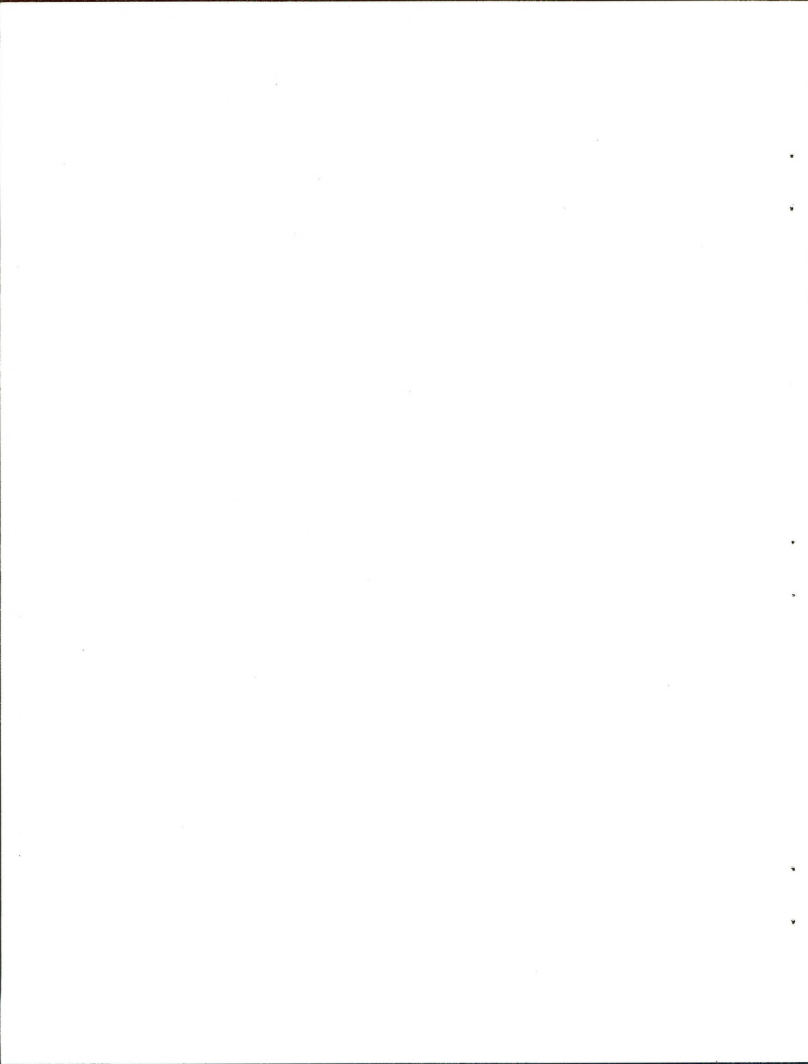
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CHAPTER I

INTRODUCTION



PURPOSE AND NEED FOR ACTION

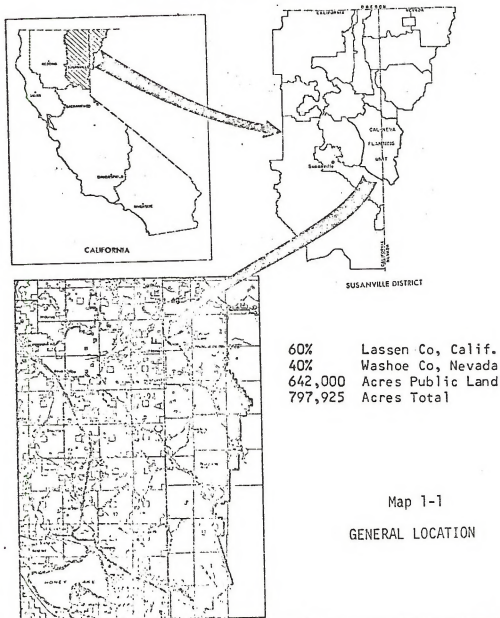
PURPOSE: MANAGE GRAZING IN ACCORDANCE WITH

- 1) Taylor Grazing Act, 1934
- 2) National Environmental Policy Act, 1969
- 3) Federal Land Policy and MGMT Act, 1976
- 4) Endangered Species Act, 1977
- 5) Public Rangeland Improvement Act, 1978

NEED: IMPROVE RESOURCE CONDITIONS ON PUBLIC LAND THROUGH IMPROVED GRAZING MANAGEMENT

- 1) 302,617 Acres in poor ecological condition
301,266 " " FAIR " "
- 2) Degraded riparian and meadows areas
- 3) Unmet deer & antelope population objectives
- 4) Excessive wild horse and burro population

LOCATION OF STUDY AREA



Map 1-1

GENERAL LOCATION

GENERAL LAND USE GOALS

- 1) a) Improve Range Conditions (20 years)
poor --> fair
fair --> good
good --> good
- b) Improve Range Condition Trend
upward for fair & poor range
static for good range
- 2) Improve Water Distribution
- 3) Maintain Deer and Antelope population:
Deer 13,000 Winter
11,000 Summer

Antelope 2,000 Winter
1,300 Summer
- 4) Maintain Healthy Herd of Wild Horses and Burros
- 5) Improve Condition of Wildlife Habitat
Riparian - poor --> fair
Meadows - poor --> fair
fair --> good

Fawning areas - Maintain or Improve
Kidding Grounds " " "
- 6) Increase or maintain water quality and quantity
- 7) Maintain or Enhance soil condition
- 8) Minimize local social and economic disruption
- 9) Give areas of critical environmental concern priority
- 10) Protect Archaeological, historic and wilderness resources,
as required by law.
- 11) Maintain or improve scenic quality

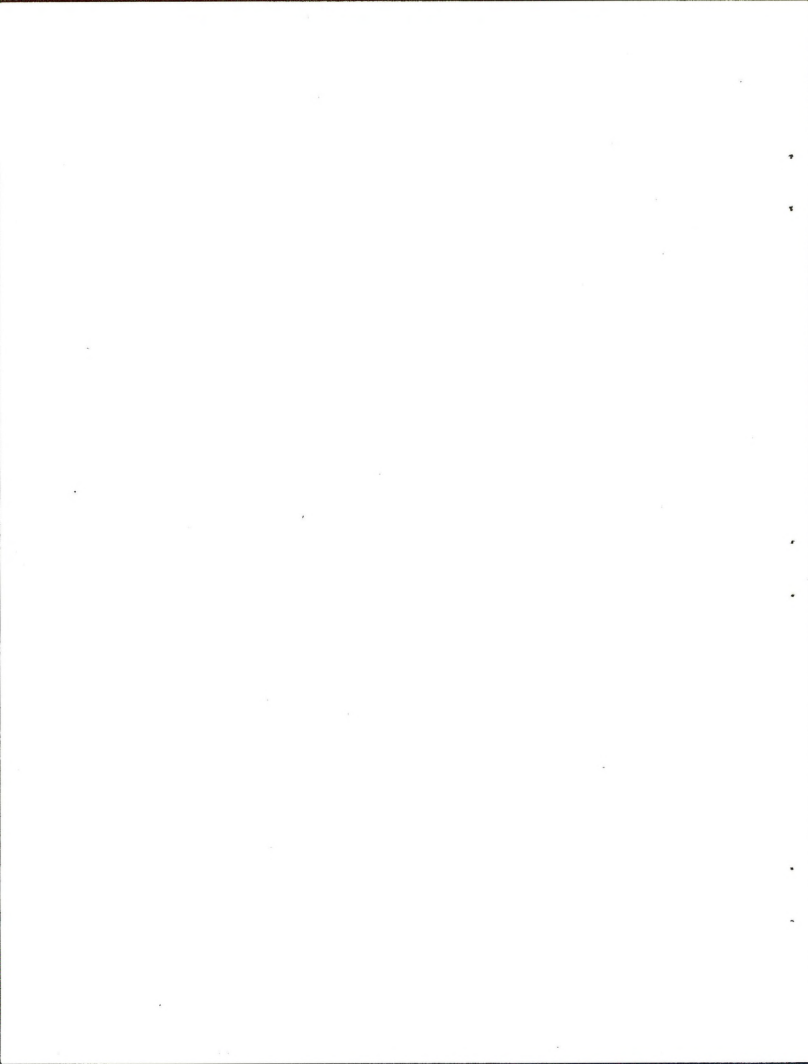
MAJOR ISSUES

- 1) Range Condition and Trend
 - Improvements needed in condition of
302,617 acres in poor condition and
301,266 acres in fair condition.
- 2) Competitive Forage Demand
 - Equitable forage allocation for:
 - Wildlife
 - Livestock
 - Wild Horses
 - Wild Burros
 - Resolving wildlife/livestock competition on:
 - Meadows
 - Aspen Stands
 - Bitterbrush stands
 - Mtn mahogany areas
 - Riparian zones
- 3) Fences and Wild Horse and Burro Movement
 - Fencing
 - Impedes movement
 - Traps animals
 - deep snow
 - waterless areas
 - Promotes overgrazing
- 4) Cultural Resources
 - Livestock
 - Cause breakage and displacement
 - Concentrate near water where cultural
resources are concentrated
- 5) Wilderness
 - Decide on restrictions for range
improvements in six WSAs
- 6) Socio-Economics
 - Potential income loss due to:
 - Livestock reductions
 - Season of use changes
 - Management requirements

KEY TERMINOLOGY	
Term	Definition
Allotment	Area of public land where one or more operators graze their livestock. May include parcels of private or state land. Number of livestock and period of use are stipulated. Contains one or more pastures
Allotment Management Plan (AMP)	Allotment-specific grazing management plan specifying livestock numbers, seasons of use, grazing system and needed range improvements.
Animal Unit Month (AUM)	Amount of feed or forage required by one cow for one month (approximately 800 lbs/month)
Carrying Capacity	Maximum stocking rate possible without damaging vegetation or related resources.
Competitive Forage	Forage being utilized by more than one grazing animal at one time
Grazing System	Prescribed systematic sequence of grazing use and non-use of allotment
Range Condition	Present state of vegetation in relation to the climax (natural potential) plant community for that site
Range Trend	Direction of change in range condition
Utilization	Percent of annual weight of plant removed by grazing animals

CHAPTER 2

ALTERNATIVES



Chapter 2

ALTERNATIVES

Introduction

This chapter provides...

1. Tabular description of five alternative grazing management plans, including the proposed action;
2. Objectives of the alternatives;
3. Specific descriptions of types of grazing systems and developments; and,
4. A Comparative summary of grazing impacts

Alternatives Considered

- A Proposed Action
- B Decreased Livestock Use
- C Increased Livestock Use
- D No Action
- E No Grazing

Alternative Objectives

Proposed Action	Protect Environmental Values with minimum changes in livestock grazing
Decreased Livestock Use	Emphasize non-livestock values without completely disrupting the area's social and economic base
Increased Livestock Use	Maximize livestock production within forage production capabilities
No Action	Continue present grazing practices
No Grazing	Provide an Environment without livestock influence

Alternative A-Proposed Action

Description

Forage allocated within carrying capacity in manner compatible with livestock, wildlife, wild horse, burro, and aesthetic needs.

Range developments undertaken to increase forage and water availability and to allow better animal distribution.

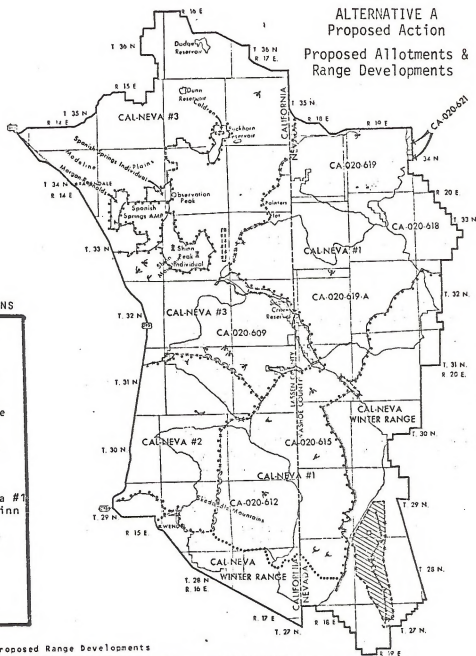
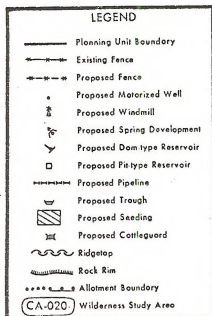
AUM ALLOCATIONS AND LIVESTOCK MANAGEMENT

Allotment	Total Available AUMs	Cattle AUMs	Sheep AUMs	Horse AUMs	Burro AUMs	Deer AUMs	Antelope AUMs	Consumptive AUMs	Number Operators	Public Land (Acres)	Use Season	Type Management	Grazing System ^{2/}
Cal-Neva #1	31,257	8,273	1,103	5,960	421	1,971	134	17,867	2	287,561	04/01-10/31	AMP	Spring/Deferred two pasture Rest-Rotation
Cal-Neva #2	14,064	2,288	-	-	-	49	43	2,380	3	53,910	04/01-10/31	AMP	Two-Pasture Rest-Rotation
Cal-Neva #3	17,834	9,092	213	1,731	-	2,182	48	13,266	4	174,364	04/16-10/31	AMP	Three-Pasture Rest-Rotation
Cal-Neva Winter	6,016	3,311	334	92	37	90	12	3,876	4	107,393	11/01-02/28	AMP	One-Pasture Deferred
Coldren	51	24	-	-	-	21	-	45	2	6,986	04/16-09/15	AMP	Three-Pasture Rotation
Spanish Springs Individual	162	90	-	-	-	18	-	108	1	8,605	04/16-10/31	AMP	Two-Pasture Deferred Rotation
Morgan-Reynolds	225	208	-	-	-	18	-	226	2	1,702	07/01-10/31	AMP	One-Pasture Deferred Summer
Spanish Springs AMP	2,308	1,105	-	-	-	47	-	1,152	1	1,318	09/01-10/31	AMP	One-Pasture Deferred
Shinn Peak Individual	1,925	852	-	-	-	49	1	902	1	1,012	05/01-10/31	Non-AMP	Continuous Season
TOTALS	73,842	25,248	1,650	7,783	458	6,445	238	39,822					

Map 2-1

ALTERNATIVE A
Proposed Action

Proposed Allotments &
Range Developments



ALLOTMENT BOUNDARY MODIFICATIONS

MAINTAIN

- Coldren
- Morgan Reynolds
- Spanish Springs AMD
- Spanish Springs Individual

ENLARGE

- Shinn Individual to Include Part Spanish Springs Fire Rehabilitation
- Cal-Neve Winter to Include lower Skedaddle

TRANSFER

- Shinn Individual to Cal-Neve #1
- Part Cal-Neve Summer to Shinn Individual

DIVIDE

- Remaining Cal-Neve into Cal-Neve #1, 2, 3

ELIMINATE

- Hylen
- Lyle

Proposed Range Developments

Allotment	Fencing ^{1/} (Miles)	Cattle Guards	Pipelines (Miles)	Windmills	Motorized Wells	Reservoirs	Spring Developments	Seedings (Acres)
Cal-Neve #1	20	2	-	-	-	4	4	-
Cal-Neve #2	10	1	-	-	1	2	-	-
Cal-Neve #3	24	-	-	-	-	1	7	-
Cal-Neve Winter	34	3	-	-	-	2	-	15,000
Spanish Springs AMD	2	-	-	-	-	-	-	-
Shinn Peak Individual	-	-	-	2	-	-	-	-
Morgan Reynolds	-	-	-	-	-	1	-	-
Spanish Springs Individual	-	-	-	-	-	-	-	-
Coldren	-	-	-	-	-	-	-	-
TOTAL	90	6	10	2	4	10	11	15,000

^{1/} This figure reflects those shown on MAP 1-4. Approximately 30 additional miles of internal pasture division fences would also be constructed. Exact location would be determined in each AMD.

Alternative B-Decreased Livestock Use

Description

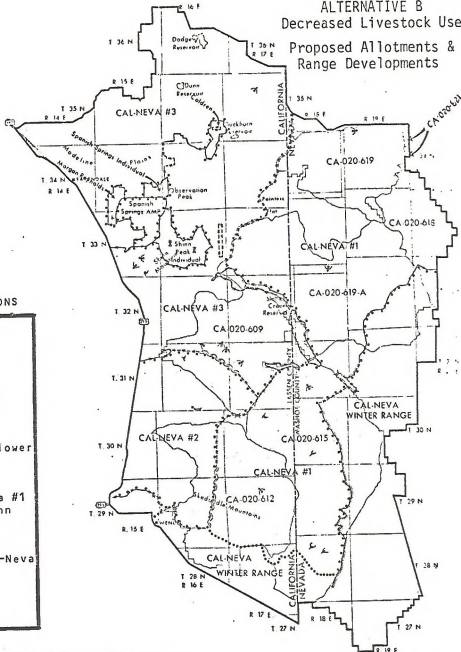
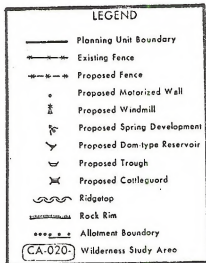
Forage allocated within carrying capacity, emphasizing non-livestock uses.

Range developments undertaken predominantly to increase forage and water available to wildlife, wild horses and burros, and to allow better distribution.

AUM ALLOCATIONS AND LIVESTOCK MANAGEMENT

Allotment	Number of Operators	Public Land (Acres)	Total AUMs ^{2/}	Cattle AUMs	Sheep AUMs	Horse AUMs	Burro AUMs	Deer AUMs	Antelope AUMs	Total Consumptive AUMs	Allotment	Type Management	Grazing System
Cal-Neva #1	2	272,263	30,286	4,141	402	8,375	613	1,971	134	15,636	04/16-10/31	AMP	Two-Pasture Deferred-Rotation
Cal-Neva #2	3	53,910	13,932	1,141	-	-	-	49	43	1,233	04/16-10/31	AMP	Two-Pasture Rest-Rotation
Cal-Neva #3	2	174,366	17,583	4,543	106	2,499	-	2,182	48	9,378	05/01-10/31	AMP	Three-Pasture Rest-Rotation
Cal-Neva Winter	3	122,491	6,852	1,454	220	125	48	90	12	2,149	11/01-10/31	AMP	One-Pasture Deferred-Winter
Spanish Springs AMP	2	6,956	2,382	550	-	-	-	47	-	597	05/16-10/15	AMP	Three-Pasture Rest-Rotation
Shinn Peak Individual	1	8,605	1,946	426	-	-	-	49	1	476	05/01-10/31	AMP	Two-Pasture Rest-Rotation
Morgan-Reynolds	2	1,702	245	108	-	-	-	18	-	126	05/01-10/31	AMP	Two-Pasture Rest-Rotation
Spanish Springs Individual	1	1,318	159	132	-	-	-	18	-	150	05/01-10/31	AMP	Two-Pasture Deferred Rotation
Coldren	1	1,012	55	60	-	-	-	21	-	81	09/01-10/31	AMP	One-Pasture Deferred-Fall
TOTAL		642,851	73,440	12,755	728	10,999	661	4,443	238	29,826			

Map 2-2
ALTERNATIVE B
Decreased Livestock Use
Proposed Allotments &
Range Developments



ALLOTMENT BOUNDARY MODIFICATIONS

MAINTAIN

- Coldren
- Morgan Reynolds
- Spanish Springs AMD
- Spanish Springs Individual

ENLARGE

- Shinn Individual to Include Part Spanish Springs Fire Rehabilitation
- Cal-Neva Winter to Include lower Skeddadle

TRANSFER

- Shinn Individual to Cal-Neva #1
- Part Cal-Neva Summer to Shinn Individual

DIVIDE

- Remaining Cal-Neva into Cal-Neva Cal-Neva 1, 2, 3

ELIMINATE

- Hylan
- Lyle

Proposed Range Developments

Allotment	Fencing ^{1/} (Miles)	Cattle Guards	Pipeline (Miles)	Windmills	Motorized Wells	Reservoirs	Spring Developments	Seedings (Acres)
Cal-Neva #1	20	2	-	-	-	4	4	-
Cal-Neva #2	10	1	-	-	1	2	-	-
Cal-Neva #3	24	-	-	-	-	1	7	-
Cal-Neva Winter	8	1	-	-	-	2	-	-
Spanish Springs AMD	2	-	-	-	-	-	-	-
Shinn Peak Individual	-	-	-	2	-	-	-	-
Morgan Reynolds	-	-	-	-	-	1	-	-
Spanish Springs Individual	-	-	-	-	-	-	-	-
Coldren	-	-	-	-	-	-	-	-
TOTAL	64	4	-	2	1	10	11	-

^{1/} This figure reflects those fences shown on MAP 1-4. Approximately 30 additional miles of internal pasture division fences would also be constructed. Exact location would be determined in each AMP.

Alternative C-Increased Livestock Use

Description

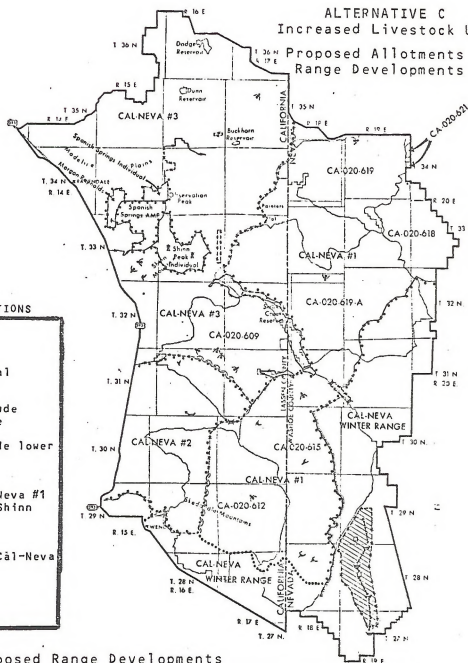
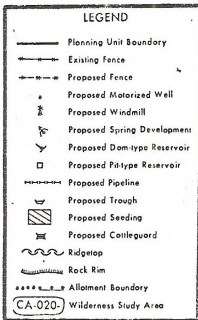
Forage allocated within carrying capacity, emphasizing livestock uses.

Range developments undertaken to increase forage and water availability for and distribution of livestock, wildlife, wild horses and burros.

AUM Allocations and Livestock Management

Alt./Treatment	Number of Operators	Public Land (Acres)	Total AUMs	Cattle AUMs	Sheep AUMs	Horse AUMs	Burro AUMs	Deer AUMs	Antelope AUMs	Total Consumptive AUMs	Season Use	Type Management	Grazing System ^{2/}
Cal-Neva #1 ^{1/}	2	287,561	31,258	12,268	1,818	5,960	421	1,971	134	22,572	04/01-10/31	AMP	Spring-Deferred. Two-Pasture Deferred-Rotation and Early Use Seeded Pasture Rest-Rotation
Cal-Neva #2	3	53,910	14,684	5,623	-	-	-	49	43	3,715	04/01-10/31	AMP	Two-Pasture Deferred-Rotation
Cal-Neva #3	4	175,376	17,835	15,404	213	1,731	-	2,182	48	19,578	04/16-10/31	AMP	Three-Pasture Deferred-Rotation
Cal-Neva Winter	4	107,393	6,016	5,543	739	92	37	90	12	6,513	11/01-03/31	AMP	One-Pasture Deferred-Rotation
Spanish Springs AMP	2	6,986	2,308	1,327	-	-	-	47	-	1,374	04/16-10/31	AMP	Three-Pasture Rest-Rotation with Early Seeded Pasture
Shinn Peak Individual	1	8,605	1,925	1,368	-	-	-	49	1	1,418	05/01-10/31	AMP	Two-Pasture Deferred-Rotation
Morgan-Reynolds	2	1,702	225	456	-	-	-	18	-	474	05/01-10/31	AMP	Two-Pasture Deferred-Rotation
Spanish Springs Individual	1	1,318	162	446	-	-	-	18	-	464	09/01-10/31	AMP	One-Pasture Deferred-Fall
TOTAL		642,851	74,443	40,435	2,770	7,783	458	4,424	238	56,108			

ALTERNATIVE C
Increased Livestock Use
Proposed Allotments &
Range Developments



ALLOTMENT BOUNDARY MODIFICATIONS

MAINTAIN

- Coldren
- Morgan Reynolds
- Spanish Springs AMD
- Spanish Springs Individual

ENLARGE

- Shinn Individual to Include Part Spanish Springs Fire Rehabilitation
- Cal-Neva Winter to Include lower Skeddadle

TRANSFER

- Shinn Individual to Cal-Neva #1
- Part Cal-Neva Summer to Shinn Individual

DIVIDE

- Remaining Cal-Neva into Cal-Neva 1, 2, 3

ELIMINATE

- Hylan
- Lyle

Proposed Range Developments

Allotment	Fencing (Miles)	Cattle Guards	Pipelines (Miles)	Windmills	Motorized Wells	Reservoirs	Spring Developments	Seedings (Acres)
Cal-Neva #1	20	2	-	-	-	4	4	-
Cal-Neva #2	10	1	-	-	1	2	-	-
Cal-Neva #3	24	-	-	-	-	1	7	-
Cal-Neva Winter	34	3	10	-	3	2	-	15,000
Spanish Springs AMD	2	-	-	-	-	-	-	-
Shinn Peak Individual	-	-	-	-	-	-	-	-
Morgan Reynolds	-	-	-	-	-	1	-	-
Spanish Springs Individual	-	-	-	-	-	-	-	-
Coldren	-	-	-	-	-	-	-	-
TOTAL	90	6	10	2	4	10	11	15,000

Alternative D-No Action

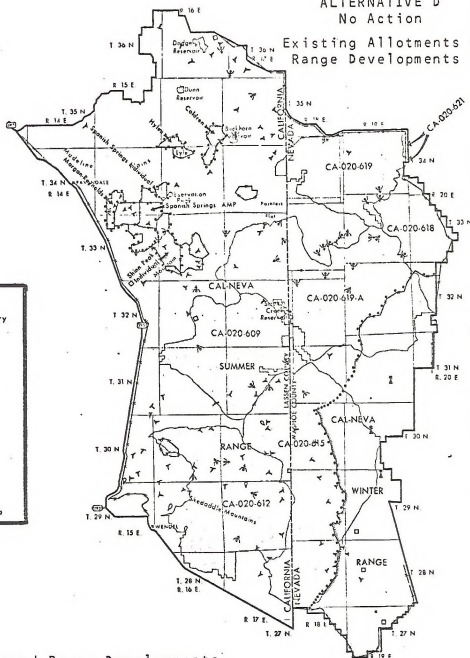
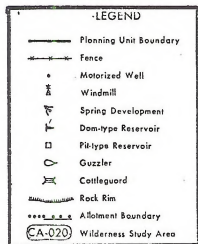
Description

No Change in present grazing
Management

AUM Allocations and Livestock Management

Allotment	Number of Operators	Public Land (Acres)	Total AUMs	Cattle AUMs	Sheep AUMs	Horse AUMs	Burro AUMs	Deer AUMs	Antelope AUMs	Total Consumptive AUMs	Use Season	Type Management	Grazing System ^{2/}
Cal-Neva Summer	9	519,552	67,709	20,165	1,316	18,057	612	4,202	194	44,546	04/01-10/31	Non-AMP	Continuous
Cal-Neva Winter	4	106,648	5,785	3,307	334	143	408	90	12	4,294	11/01-03/31	Non-AMP	One-Pasture Deferred-Winter
Spanish Springs AMP	2	6,986	1,889	1,105	-	-	-	47	-	1,152	05/16-10/15	AMP	Two-Pasture Deferred-Rotation AMP
Sierra Peak Incl. Local	1	4,805	1,064	270	-	-	-	49	1	320	04/16-06/30	Non-AMP	Continuous
Morgan-Reynolds	2	1,702	244	210	-	-	-	18	-	228	05/01-10/31	Non-AMP	Continuous
Spanish Springs Individual	1	1,318	157	256	-	-	-	18	-	274	05/01-08/31	Non-AMP	Continuous
Coldren	1	1,012	50	114	-	-	-	21	-	135	05/01-10/31	Non-AMP	Continuous
Hylen	1	444	32	30	-	-	-	4	-	34	05/01-10/31	Non-AMP	Continuous
Lyle	1	384	14	36	-	-	-	4	-	40	05/01-10/31	Non-AMP	Continuous
Total		642,851	76,944	23,493	1,450	18,200	1,020	4,453	207	51,023			

No Action



Proposed Range Developments

Allotment	Fencing (miles)	Cattle Guards	Pipeline (miles)	Windmills	Motorized Wells	Reservoirs	Spring Developments	Seedings (acres)
Cal-Neva Summer	97	2	-	-	5	4	4	-
Cal-Neva Winter	43	1	-	4	4	7	1	-
Spanish Springs AMP	16	-	-	-	-	4	1	2,000
Shinn Peak Individual	11	-	-	-	-	4	1	4,805
Horgan Reynolds	8	1	-	-	-	2	-	-
Spanish Springs Individual	9	-	-	-	-	1	-	-
Caldren	9	1	-	-	-	-	-	-
Hylan	3	-	-	-	-	-	-	-
Lyle	4	-	-	-	-	-	-	-
TOTAL	200	4	-	4	9	92	26	11,800

Alternative E: No Grazing

Description

All Grazing cancelled

Maintenance of Range facilities
only to benefit other resources

AUM Allocations

Allotments	Total AUMs	Cattle AUMs	Sheep AUMs	Horse AUMs	Burro AUMs	Deer AUMs	Antelope AUMs	Total Consump- tive AUMs
Cal-Neva Summer	67,709	-	-	10,920	612	4,202	194	15,928
Cal-Neva Winter	5,785	-	-	130	48	90	12	280
Spanish Springs AMP	1,889	-	-	-	-	47	-	47
Shinn Peak Individual	1,064	-	-	-	-	49	1	50
Morgan- Reynolds	224	-	-	-	-	18	-	18
Spanish Springs Individual	157	-	-	-	-	18	-	18
Coldren	50	-	-	-	-	21	-	21
Hylen	32	-	-	-	-	4	-	4
Lyle	14	-	-	-	-	4	-	4
TOTAL	76,944	0	0	11,050	660	4,453	207	16,370

INTRODUCTION

All descriptions within this section are applicable to all alternatives.

Specific descriptions of each alternative indicate whether, when and where developments and systems will be implemented.

GRAZING SYSTEMS

Land Use Plan will decide Grazing MGMT practices

Recommend Practices Are:

Grazing will not exceed forage supply

Native Range will be rested at least 1 growing season after use

Seasons of use will meet soil and plant requirements

No Utilization over 60% of Key Native plants

Plants Phenology will determine treatment schedules

Sheep Husbandry

Sheep will be herded

Lambing grounds, trails and bedding

Grounds will be rotated

STANDARD OPERATING PROCEDURES

Pre-range project development

Inventory endangered species

cultural resources

If adverse impact are possible

USF&WS

consult

state historic preservation officer

advisory council on historic Pres.

Local native americans

Design

Fences according to multiple use needs

Deer & Antelope specifications

not on contour of erodible soils

Water development for all users

Fence springs

available to horses/burros/wildlife

Post Project Action

Reseed Disturbed Areas

Adhere to interim management policy in all WSA's

Adhere to best management practices in all water development

RANGE DEVELOPMENTS

Water Troughs

18ft. Circular with concrete base

or

3ft. X 12ft. metal trough

All Trough have wildlife escape ramps

Disturbance = .2ac/trough

Springs

Excavate Spring Source

Install 3X3 Metal Headbox

Pipe Water to Trough

Leave Water at Source for Wildlife

Pipe overflow into original drainage

Fence meadow complex

Windmills

Drill well

Install Windmill

Place storage tank

Disturbance = .1ac/windmill

Reservoirs

Place Dike

Provide Spillway

or

Excavate Pit

Size = 1-5 acres

Acce Capacity = 8 ac/ft

Wells

Drill and Case

Place Pump facilities in small shed

Place storage tank (Optional)

Disturbance = .5ac/well

Pipeline

Exchange trench 30" deep with riprap

Bury 1.5 2.5m pipe and backfill

Install a water Trough/Mile of pipeline

Land Treatments

Remove unwanted brush by:

Applying 2.4-2 from airplanes

Burning on designated

Dragging Anchorchain between tractors

Plowing with multiple Dist. plow

Beating brush with rotary brush habater

Fences

Install per specifications (antelope ect)

Disturbance = 1Ac/Mi

Seed Treated Areas with forage species

Rest seed Areas from Grazing until Plant established

to resist Pull-up from grazing

IMPLEMENTATION OF AMP'S

Priority

- 1) Stocking level, season of use, systems
Consult with permittees
Phase in changes
- 2) Monitoring Systems
- 3) Water Developments
- 4) Fences
- 5) Land treatments

MONITORING PROGRAMS

Adjustment of Grazing Management would be based on results from the following monitoring:

Trend

Sample plant frequency and Ground cover

Sample key areas of allotment pastures

Utilization

Sample plant utilization before and after
Grazing

Actual Use

Document actual grazing use of each allotment

Rain

Install and read rain gauges

Water

Sample quality 4 times a year
Sample quantity 2 times a year

Soil Movement

Assessed using modified universal
soil loss Equation

Endangered and Threatened Plants

Quantify changes in LOMATIUM
RAVENII: and DRABA douglassii

Cultural Resources

Photograph National Register quality
Sites at the end of each
Grazing Season

Wild Horses and Burros

Annually determine Population sizes and location

Development of Alternatives

LAND USE PLANNING PROCESS

Proposed Action Part of 3 stage process
 Information Gathering
 Land-Use Planning
 Plan Implementation

Information Gathering Steps
 Issues and data needs
 Field studies
 Data Assimilation
 Data Analysis

Land Use Planning Steps
 - Resource specialists make recommendations
 - Conflicts analyzed and resolved in the form of a proposed action and alternatives
 - EIS prepared
 - Land use decisions made
 - Rangeland program summary distributed containing tentative grazing decisions
 - Consultation and final decisions

ALTERNATIVE CONSIDERED BUT NOT ANALYZED

Extensive Seedings
 40,000 Acres

Reasons for Rejection
 Conflicts with wilderness
 Insufficient forage demand
 Excessive cost

Grazing Impacts Summary

Alternatives

ELEMENT EVALUATED	UNITS	EXISTING SITUATION	PROPOSED ACTION ALTERNATIVE A	DECREASED LIVESTOCK USE ALTERNATIVE B	INCREASED LIVESTOCK USE ALTERNATIVE C	NO ACTION ALTERNATIVE D	NO GRAZING ALTERNATIVE E
SOILS							
Compaction Area Wide Concentration Areas			Reduced Greatly Reduced	Reduced Slightly Reduced	Increased Increased	Slight Increase Slight Increase	Greatly Reduced Greatly Reduced
Infiltration Area Wide Concentration			Increased Increased	Increased No Change	Reduced No Change	Reduced No Change	Increased Increased
Cover Area Wide Concentration Areas	%	81% Average	No Change (82%) Increased	No Change (82%) Increased	No Change (82%) Decreased	No Change (81%) No Change	No Change (82%) Increased
Meets Soil Objective			Yes	Yes	No	No	Marginally/yes
WATER RESOURCES							
Surface Quality - Meets Objective							
Sediment			Yes	Yes	No	No	Yes
Temperature			Yes	Yes	No	No	Yes
Pathogens			Yes	Yes	Yes	May Not	Yes
Dissolved Oxygen			Yes	Yes	Yes	No	Yes
Water Supply Water Yield	Ac.ft./yr.	15,000	Slight Increase	Very Slight Increase	Slight Increase	No Change	Very Slight Increase
Water Consumption Net Available Water (after consumption)	Ac.ft./yr.	Less Than 3	Less Than 3	Less Than 3	Less Than 3	Less Than 3	Less Than 3
Meets Objective			Yes	Yes	Yes	Yes	Yes
Flood Plain - Meets Objective			Yes	Yes	Yes	Yes	Yes
Wetlands - Meets Objective			Yes	Yes	Marginally Yes	No	No

Grazing Impacts Summary

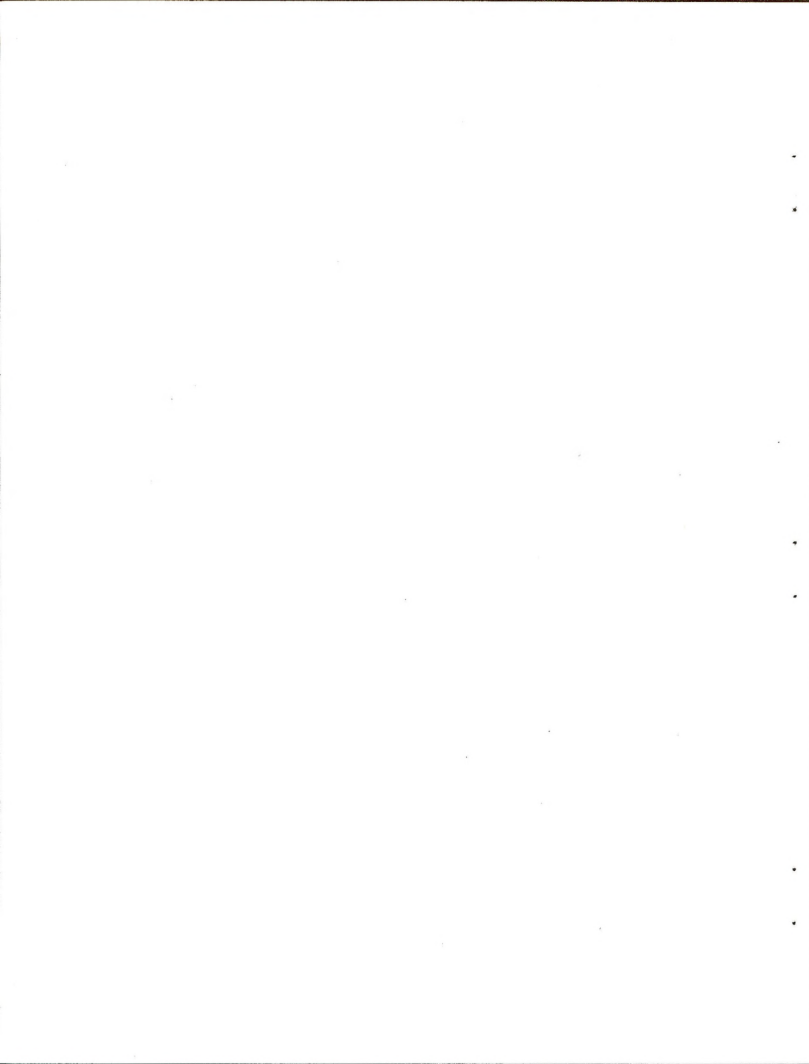
ELEMENT EVALUATED	UNITS	EXISTING SITUATION	PROPOSED ACTION ALTERNATIVE A	DECREASED LIVESTOCK USE ALTERNATIVE B	INCREASED LIVESTOCK USE ALTERNATIVE C	NO ACTION ALTERNATIVE D	NO GRAZING ALTERNATIVE E
VEGETATION							
Range Condition in 20 Years	Acres						
Poor		302,617	216,426	218,942	351,759	308,687	202,745
Fair		301,266	194,281	191,181	233,647	295,241	199,284
Good-Excellent		38,968	232,144	219,728	57,445	38,923	240,822
Production	Total Available AUMs	76,944	92,571	83,818	74,507	77,000	89,668
ENDANGERED AND THREATENED PLANTS							
Trampling			Reduced	Reduced	Reduced	No Change	Reduced
Grazing Use			May Increase	May Increase	May Increase	No Change	Reduced
Population and Habitat Condition			Unknown	Unknown	Unknown	No Change	Unknown
LIVESTOCK							
Performance			Improved	Improved	Static	Static	
WILDLIFE							
Mule Deer							
Population Size	Numbers						
Winter		10,000	12,000	12,000	9,000	10,000	12,000 (Decrease slowly)
Summer		8,000	10,700	10,700	7,200	8,000	10,700 (Decrease slowly)
Habitat Condition		Fair	Low Good	Good	Low Fair	Fair	Good (Decrease slowly)
Pronghorn Antelope							
Population Size	Numbers						
Winter		1,600	2,000	2,000	1,450	1,600	2,000 (Decrease slowly)
Summer		925	1,300	1,300	825	925	1,300 (Decrease slowly)
Habitat Condition		Fair	Low Good	Good	Low Fair	Fair	Good (Decrease slowly)

ELEMENT EVALUATED	UNITS	EXISTING SITUATION	PROPOSED ACTION ALTERNATIVE A.	DECREASED LIVESTOCK USE ALTERNATIVE B	INCREASED LIVESTOCK USE ALTERNATIVE C	NO ACTION ALTERNATIVE D	NO GRAZING ALTERNATIVE E
Sage Grouse Habitat Condition		Fair	High Fair	Low Good	Poor	Low Fair	Good - Decline to Low Fair
Fisheries Habitat Condition		Poor	Good	Good	Good	Poor	Good
Willow-Riparian Habitat Condition		Poor	Good	Good	Good	Poor	Good
Sooke Creek Others		Poor	Poor	Fair	Poor	Poor	Good
Semi-Wet Meadows Habitat Condition		Low Fair	High Fair	Good	Poor	High Poor	Good
WILD HORSES	Numbers	1,400	600	850	600	1,400	850
WILD BURROS	Numbers	160	75	110	75	160	110
RECREATION							
Hunting Deer	Hunter Days	3,750	5,000	5,000	3,375	3,750	5,000
Antelope	Hunter Days	315	425	425	280	315	425
Upland Game	Hunting Opportunities		Moderate Improvement	Moderate Improvement	Slight Decrease	Slight Decrease	Moderate Improvement
Off Road Vehicles	Cross Country Travel		Slight Decrease	Very Slight Decrease	Slight Decrease	No Change	Slight Improvement
VISUAL							
Vegetation	Visual Quality		Slight Improvement	Slight Improvement	Slight Decrease	Slight Decrease	Slight Improvement
Range Improvement	Visual Quality		Slight Decrease	Slight Decrease	Slight Decrease	No Impact	Slight Improvement

ELEMENT EVALUATED	UNITS	EXISTING SITUATION	PROPOSED ACTION ALTERNATIVE A	DECREASED LIVESTOCK USE ALTERNATIVE B	INCREASED LIVESTOCK USE ALTERNATIVE C	NO ACTION ALTERNATIVE D	NO GRAZING ALTERNATIVE E
WILDERNESS							
Suitability - Preserved			Yes	Yes	Yes	Yes	Yes
Unnecessary and Undue Degradation			No	No	No	No	No
Naturalness	Quality		Slight Decline	Slight Decline	Moderate Decline	Mostly Unchanged	Improve
Solitude	Opportunities		Slight Decline	Slight Decline	Moderate Decline	Mostly Unchanged	Improve
Primitive and Unconfined Type Recreation	Opportunities		Slight Improvement	Slight Improvement	Slight Decline	Mostly	Improve
Vegetation Condition -Trend			Slight Improvement	Slight Improvement	Unchanged	Unchanged	Slight Improvement
Soil Condition - Trend			Slight Improvement	Slight Improvement	Slight Decline	Unchanged	Slight Improvement
CULTURAL							
Trampling		Severe Trampling at Water Sources	Slight Increase	Decrease	Increase	No Change	Significant Decrease
Erosion		Significant Displacement and Attrition at Deposits.	Decrease	Decrease	Increase	Slight Increase	Significant Decrease
SOCIAL AND ECONOMIC CONDITIONS							
Total Livestock Use	AIMs	30,260	30,014	15,138	48,384	30,260	0
Change from Existing Conditions	%		0	-50	+60	0	-100
Operators Substantially Affected	Numbers	15	0	7	9	0	11

CHAPTER 3

AFFECTED ENVIRONMENT



Chapter 3

AFFECTED ENVIRONMENT

INTRODUCTION

This chapter provides...

1. A description of the project environment as it presently exists to serve as a baseline for comparison with impacts projected in chapter 4 for each alternative.
 2. A description of only those components of the environment likely to be affected by implementation of the alternatives
 3. No consideration of those components not likely to be significantly impacted, such as air quality and geology.
-

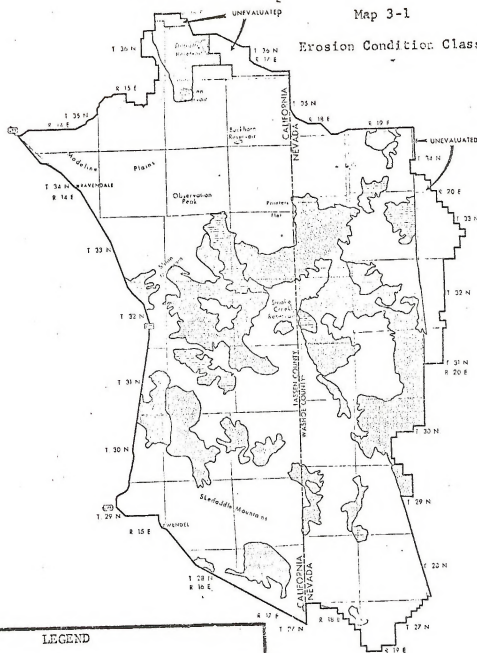
Environmental Components described include...

1. Soils
 2. Vegetation
 3. Livestock
 4. Wildlife
 5. Wild Horses and Burro
 6. Wilderness
 7. Cultural Resources
 8. Socio-Economics
-

SOILS

Map 3-1

Erosion Condition Classes



LEGEND

— Planning Unit Boundary

	Soil Surface Factor (SSF)	Erosion Condition Class	Acres	%
	0 - 20	Stable	26,000	4
	21 - 40	Slight	466,000	72
	41 - 60	Moderate	42,000	22
	61 - 80	Severe	6,500	1
(NONE)	81 - 100	Critical	0	0

VEGETATION

Range Condition and Trend

	CONDITION (BLM ACRES)				TREND (BLM ACRES)		
	Excellent	Good	Fair	Poor	Improving	Stable	Declining
Hulen	0	0	159(36%)	285(64%)	0	444(100%)	0
Coldren	0	0	713(70%)	299(30%)	0	1,008(100%)	4(1%)
Lyle	0	0	76(20%)	308(80%)	0	384(100%)	0
Spanish Springs AMP	0	1,562(23%)	5,394(77%)	30(1%)	768(11%)	6,218(89%)	0
Spanish Springs Individual	0	0	1,002(76%)	316(24%)	0	1,318(100%)	0
Morgan Reynolds	0	0	1,607(94%)	95(6%)	715(42%)	987(58%)	0
Shinn Peak Individual	0	2,173(45%)	2,632(55%)	0	1,158(24%)	3,647(76%)	0
Cal-Neva Summer	45(1%)	34,268(7%)	229,475(44%)	255,764(49%)	42,603(8%)	432,267(83%)	44,681(9%)
Cal-Neva Winter	0	920(1%)	60,208(56%)	45,520(43%)	640(1%)	86,385(81%)	19,623(18%)
TOTAL	45(1%)	38,923(6%)	301,266(47%)	302,617(47%)	45,884(7%)	532,658(83%)	64,308(10%)

Present Vegetation Production

ALLOTMENT	PRODUCTION (AUMs) ^{1/}
Hulen	32
Coldren	50
Lyle	14
Spanish Springs AMP	1,889
Spanish Springs Individual	157
Morgan Reynolds	244
Shinn Peak Individual	1,064
Cal-Neva Summer	67,709
Cal-Neva Winter	5,785
TOTAL	76,944

ENDANGERED AND THREATENED PLANTS

FEDERALLY LISTED

NONE

STATE LISTED - ENDANGERED

Lomatium Ravenii

population near Ravendale
population near Painters Flat

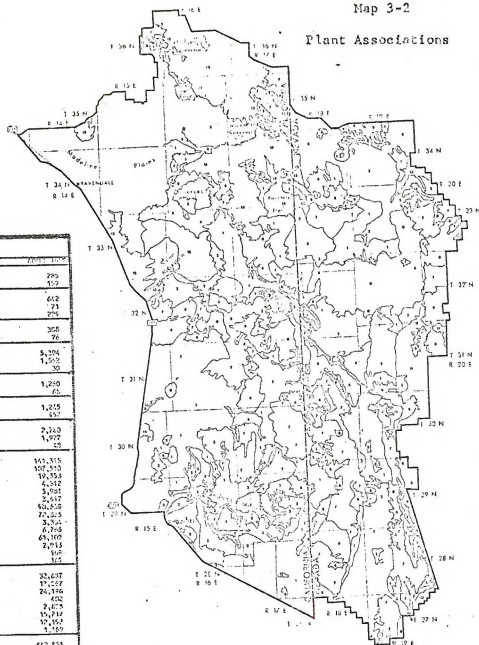
Ungrazed by Livestock

SPECIES OF CONCERN

Draba douglasii

Small population near Shearing Corral
Ungrazing by Livestock

Mad 3-2

[illegible]

LEGEND

Planning Unit Boundary

- | | |
|----|---|
| 3 | Big sagebrush / Cheatgrass |
| 4 | Big sagebrush / Squirreltail |
| 5 | Big sagebrush /
Lutescent wheatgrass |
| 6 | Big sagebrush / Idaho fescue |
| 7 | Big sagebrush / Sedge |
| 8 | Low sagebrush / Cheatgrass |
| 9 | Low sagebrush / Squirreltail |
| 10 | Low sagebrush / Bluebunch wheatgrass |
| 11 | Black greasewood / Cheatgrass |
| 12 | Black greasewood / Salicornia |
| 13 | Black greasewood / Shadscale |
| 14 | Waters |
| 15 | Western juniper / Sagebrush |
| 16 | Salt-tolerant sagebrush / Annual forb |
| 17 | Big sagebrush /
Crested wheatgrass |

LIVESTOCK GRAZING

Livestock Grazing

Operators 15
Cattle 4,270
Sheep 9,000

498,264 acres suitable for grazing
50,639 acres unsuitable for grazing
93,948 acres potentially suitable for grazing

Distribution of water a limiting factor

Grazing use reduced 37 percent in 1967 to
bring grazing within range carrying capacity

Trespass was a major problem. One operator's
permit of 9,232 AUMs was permanently
cancelled in 1979.

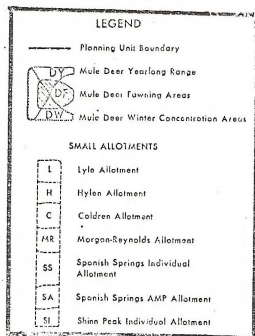
Grazing Lands

Allotment	Number of Operators	Ownership (acres)		
		Federal	State	Private
Hylen	1	444	0	360
Coldren	1	1,012	0	903
Lyle	1	384	0	493
Spanish Springs AMP	2	6,986	0	1,552
Spanish Springs Individual	1	1,318	0	1,220
Morgan Reynolds	2	1,702	0	0
Shinn Peak Individual	1	4,805	0	80
Cal-Neva Summer	11	519,552	8,263	37,078
Cal-Neva Winter	4	106,645	2,400	21,620
TOTALS		642,851	10,663	63,306

Grazing qualifications

Allotment	Qualifications (AUMs)		Total	Season of Use	Class of Livestock
	Active	Suspended			
Hylen	33	5	38	05/01-10/31	Cattle
Coldren	119	19	138	05/01-10/31	Cattle
Lyle	38	6	44	05/01-10/31	Cattle
Spanish Springs AMP	1,103	222	1,325	05/16-10/31	Cattle
Spanish Springs Individual	259	187	446	05/01-08/31	Cattle
Morgan Reynolds	210	254	464	05/01-10/31	Cattle
Shinn Peak Individual	272	94	366	04/16-06/30	Cattle
Cal-Neva Summer	23,658	14,208	37,946	04/01-10/31	Cattle and Sheep
Cal-Neva Winter	4,628	2,995	7,623	11/01-03/31	Cattle and Sheep
TOTALS	30,320	18,070	48,390		

WILDLIFE

Map 3-3
Mule Deer

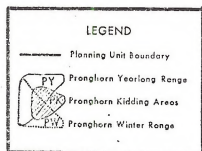
Population

Winter	10,000
Spring, Summer, Fall	8,000

Habitat Condition

Range Type	Poor		Fair		Good		Total	
	Acres	%	Acres	%	Acres	%	Acres	%
Winter	82,460	40	113,580	55	10,123 ^m	5	206,161	100
Fawning	41,328	37	69,545	62	1,820	1	112,693	100
Yearlong	63,910	37	98,763	57	9,959	6	172,632	100

Map 3-4
Pronghorn Antelope



Population

Winter	1600
Spring, Summer, Fall	925

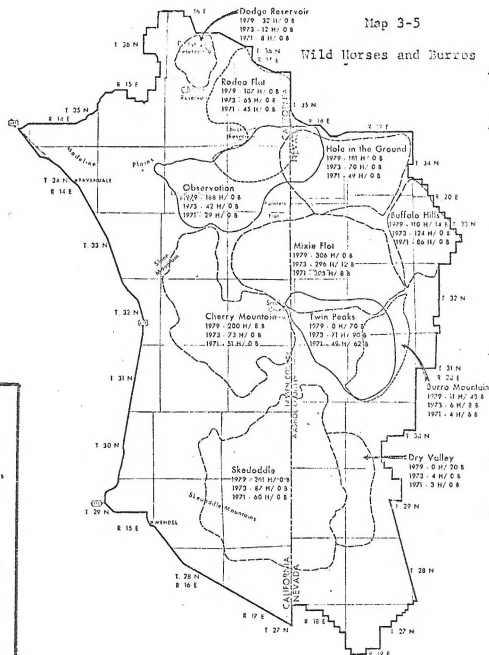
Habitat Condition

Range Type	Poor		Fair		Good		Total	
	Acres	%	Acres	%	Acres	%	Acres	%
Winter	20,077	12	121,408	72	27,032	16	172,367	100
Kidding	5,521	14	29,394	73	5,223	13	40,138	100
Yearlong	53,585	10	200,913	67	43,451	15	297,969	100

WILD HORSES AND BURROS

Map 3-5

Wild Horses and Burros



Populations

Year	Horses	Burros
1971	589	76
1973	850	110
1979	1396	160

Physical Condition

Good

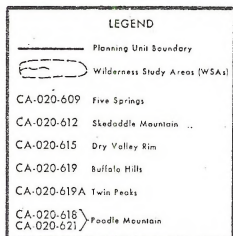
Due To:

- Minimum Mortality
- High Reproduction

WILDERNESS

Map 3-6

Wilderness Study Areas (WSAs)



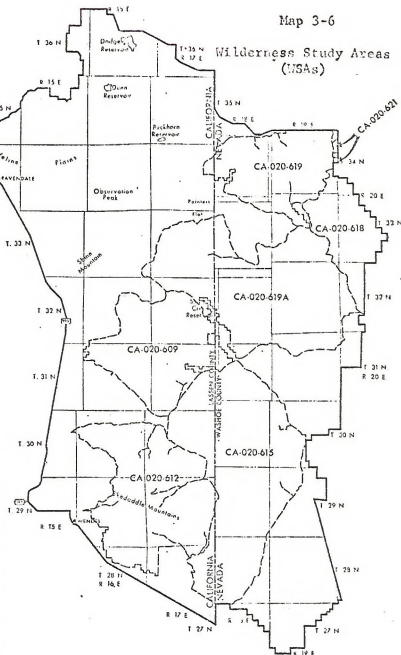
General Description

Six WSAs Totalling 357,515 acres

Suitability study results to be reported to President by 1991

Interim management will be applied until then:

- Existing uses allowed
- Unnecessary/undue degradation not allowed



Five Springs WSA (CA-020-609); 47,160 acres

Mountainous, Gentle - Mod. steep slopes
2 small perennial creeks
No fish populations
Near Pristine Appearance
Outstanding opportunity for solitude.

Skeddaddle Mtn. WSA (CA-020-612); 10,960 acres

Bottomlands to angular peaks
Outstanding solitude/primitive
Large wildlife populations
Cherrytree Roads give access to nonpublic land

Dry Valley Rim WSA (CA-020-615); 93,025 acres

Elevation 3,700 - 6,200 feet
Highly variable terrain
Solitude Outstanding
Primitive Recreation
Near Pristine Character

Buffalo Hills WSA (CA-020-619); 47,315 acres

High, volcanic plateau
Scattered junipers
Outstanding solitude
Three canyons up to 1,000 feet deep
Pristine condition altered

Twin Peaks WSA (CA-020-619A); 90,345

Rugged mountains, plateaus, canyons
Perennial streams, several seasonal streams
Variety of primitive recreation
Large wildlife and wildhorse/burro population

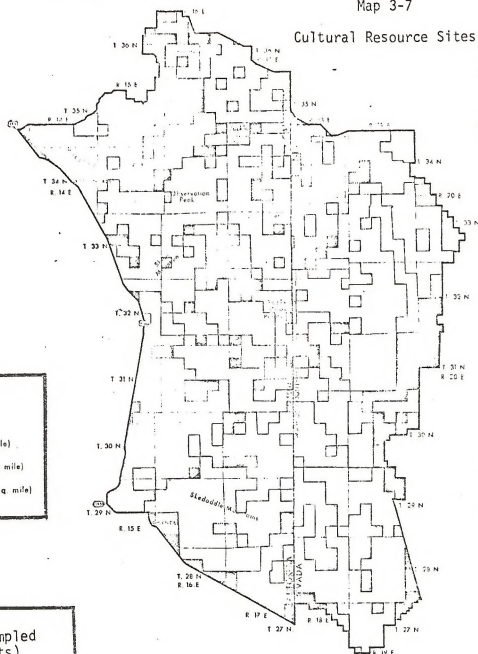
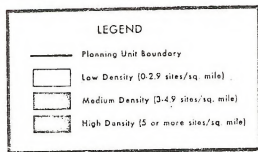
Poodie Mountain WSA (CA-020-618, 621); 25,830 acres

Upland plateau, rolling hills
Five major canyons
Junipers of heavy/medium density
Near pristine condition
Large population - deer and raptors

CULTURAL RESOURCES

Map 3-7

Cultural Resource Sites



13.84 percent of Cal-Neva sampled
(6.11 by BLM archaeologists)

179 sites were detected

2927 sites are predicted

381 sites professionally recorded

No sites on National Register
of Historic Places

10 archaeological sites, 4
archaeological districts and
1 historic site believed
eligible for National Register

Native Americans keenly interested
in protection of sites

SOCIO-ECONOMIC CONDITIONS

POPULATION (1980)
 Region (Lassen Co.) 21,500
 Percent Growth 26% 1970-1980
 Similar Growth Expected

INDUSTRY AND EMPLOYMENT

<u>Industries</u>	<u>LASSEN COUNTY-1979</u>		<u>CALIFORNIA-1978</u>
	<u>No. of Employees</u>	<u>Percent</u>	<u>Percent</u>
Agricultural, forestry, fisheries, and other	125	1.9	3.0
Construction and mining	250	3.8	4.5
Manufacturing	725	11.1	18.8
Transportation and public utilities	275	4.2	5.1
Wholesale and retail trade	975	14.9	21.4
Finance, insurance and real estate	200	3.1	5.7
Services	725	11.1	21.0
Government	3,275	50.0	20.0
Total, all industries	6,550	100.	100.

1/ Source: California Health and Welfare Agency, 1980.

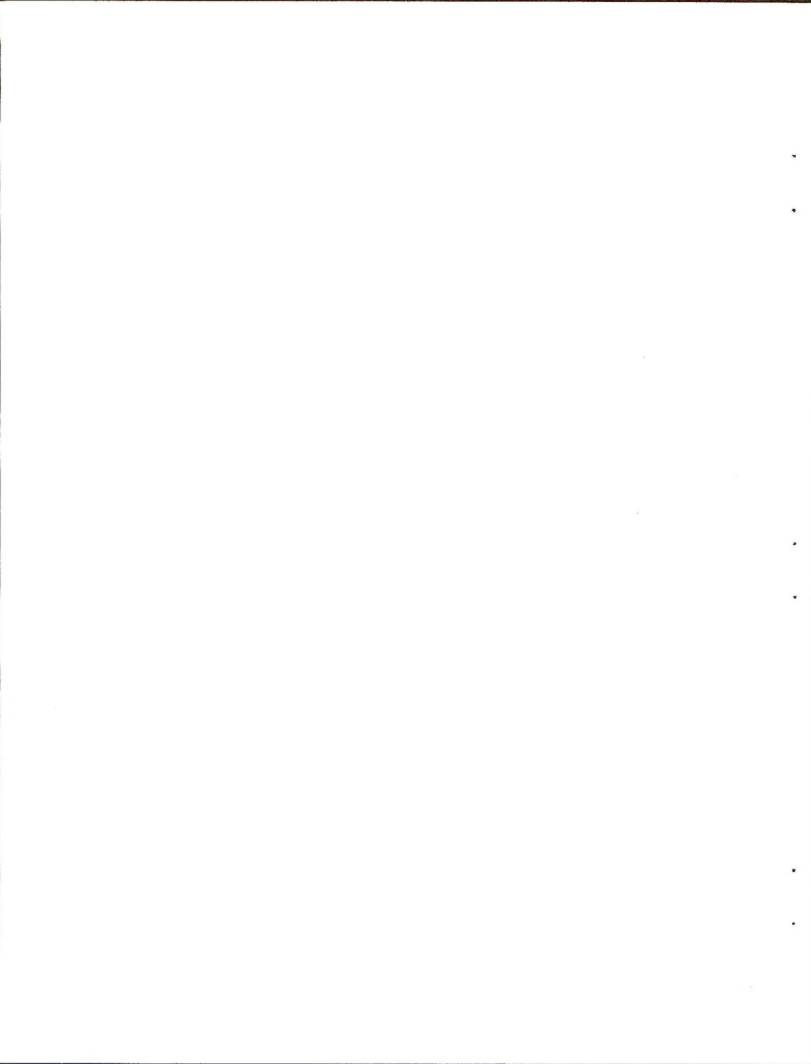
Livestock Industry

Meat and Wool Sales \$13,000,000.
 48% of Regional Agricultural Sales
 20% of their feed in Cal-Neva

Livestock Operators

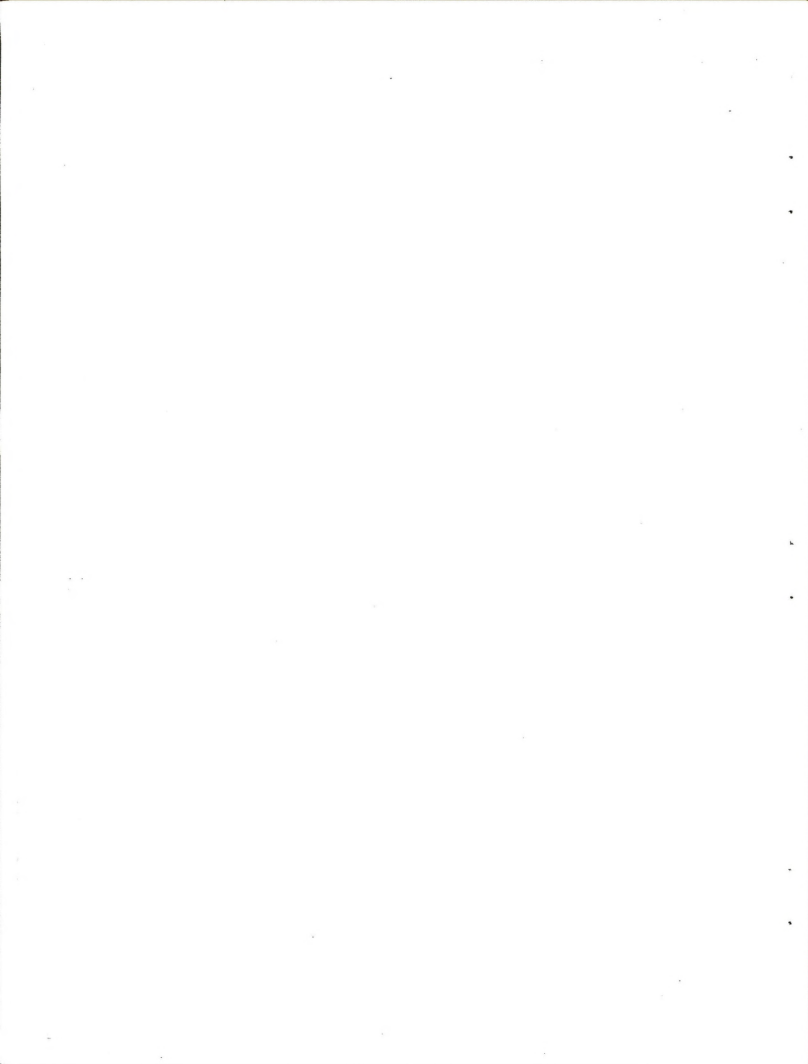
15 operators
 30 AUM's Active Preference
 Mid-Spring, Summer Use
 6 Operators use National Forest Lands
 11 Family Enterprises

	<u>CATTLE OPERATORS</u>			<u>SHEEP OPERATORS</u>
	<u>Part-Time</u>	<u>Small/Medium</u>	<u>Large</u>	
Number of Operators	3	6	5	2
Average Herd Size	Less than 50	200	2,000	3,000
Total AUMs Obtained from Cal-Neva Allotments	276	3,775	21,486	4,783
Percent of Total Cal-Neva Livestock Forage	1%	12%	71%	16%
Average Percent of Annual Forage Requirements Obtained from Cal-Neva Allotments (Dependency)	29%	32%	20%	28%
Range of Dependency (Percent)	24-34	110-48	5-45	13-43



CHAPTER 4

ENVIRONMENTAL CONSEQUENCES



Chapter 4

ENVIRONMENTAL CONSEQUENCES

INTRODUCTION

This chapter provides...

1. Scientific and analytic basis for selection of the preferred alternative
2. Mitigating measures developed in response to identified issues
3. Unavoidable adverse impacts which cannot be mitigated

The analysis of alternatives is organized by issues...

1. Range condition, trend, and production
2. Competitive forage demand
3. Wild horse and burro movement
4. Destruction of Cultural Resources
5. Wilderness Values
6. Socio-Economics

Based on the following assumptions:

1. Near-normal annual precipitation
2. Five year implementation (1983 through 1987)
3. Funds and personnel available for implementation
4. Wild horse reductions made prior to full implementation
5. Impacts will be monitored and adjusted as necessary
6. Minor adjustments in management may occur
7. Short term refers to five years, Long-term to twenty years
8. Water will be available at obtainable depths, and permits will be issued
9. Baseline data accurate

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ALTERNATIVE A

Issue 1: Range condition and Trend

General

Plant Associations

Fair condition associations will improve to good faster than poor condition associations will improve to fair (McLean and Tisdale, 1972).

Lack of significant improvement in some associations due to:

- Poor Soils
- Low Precipitation
- Competition with invader species
- Low plant vigor
- Insufficient seed source

Improvement where remnant populations of desired species are significant

Associations presently low-fair will improve to fair

Associations presently high poor will improve to fair

Associations with an upward trend will improve one condition class

Range Developments

Increase in suitable range

Alleviation of heavy concentrated use, improving utilization patterns

Total of 175 acres distributed

-120 by fences

-55 by water developments and cattleguards

Dry Fair Seeding

No adverse impacts due to rest each year allowing improved:

- Plant Vigor
- Seed Production
- Litter accumulation

(Hormay 1970)

Range Condition and Vegetation Production in 20 Years

Allotment	Condition (Acres)			Production Production (AUMs)	Change from Present
	Excellent and Good	Fair	Poor		
Cal-Neva #1	109,973 (38X) ^{1/}	86,028 (30X)	91,566 (32X)	42,585 ^{2/}	+ 3X
Cal-Neva #2	15,477 (29X)	16,097 (30X)	22,336 (41X)	16,738	+11X
Cal-Neva #3	52,483 (30X)	52,906 (30X)	68,975 (40X)	20,536	+11X
Spanish Springs AMP	5,176 (74X)	1,790 (24X)	20 (1X)	2,848	+51X
Spanish Springs Individual	668 (51X)	438 (33X)	206 (16X)	199	+27X
Morgan-Reynolds	1,077 (63X)	561 (33X)	64 (4X)	244	0
Shinn Peak Individual	7,594 (88X)	1,011 (12X)	0	2,241	+32X
Goldren	478 (47X)	334 (33X)	200 (20X)	62	+24X
Cal-Neva Winter	39,218 (36X)	35,116 (30X)	33,059 (30X)	7,118	+ 7X
TOTAL	232,144 (36X)	194,281 (30X)	216,426 (34X)		

Change from
Present

+496X

-36X

-28X

^{1/} Includes 15,000 acres from Dry Valley Seeding

^{2/} Total Available AUMs

^{3/} Includes 4,950 AUMs from Dry Valley Seeding

Specific Impacts by Allotment

Cal Neva 1

Rest on Large Percentage of
range yields
-improved plant vigor
-improved seed production
(Hormay, 1970)
Spring use of seeding allows
-spring rest of nature
range
-faster rate of plant
succession
-faster improvement in
range condition

Cal Neva 2

Rest on Large percentage of
of range yields
-improved plant vigor
-improved seed production
(Hormay, 1970)

Cal Neva 3

Rest on large percentage of
range yields
-improved plant vigor
-improved seed production
(Hormay, 1970)

Cal Neva Winter

Annual dererment during
critical growing periods,
providing improved.
-plant vigor
-seed production
-range condition

Spanish Springs AMP

Rest on Large percentage of
range yields
-improved plant vigor
-seed production
-range condition
(Hormay, 1970)

Spanish Springs Individual

Turnout dates deferred until
after critical growing periods,
providing improved:
-plant vigor
-seed production
-range condition

Morgan-Reynolds

Turnout dates deferred until
after critical growing periods,
providing improved:
-plant vigor
-seed production
-range condition

Shinn Peak

Turnout dates deferred until
late in critical growing
period in each pasture every
two years, providing improved:
-plant vigor
-seed production
-range condition
Rate of improvement
slower than possible due to
turnout date being two weeks
prior to range readiness

Coldren

No Change

Issue 2: Competitive Forage DemandProjected
Populations

Animal	Present Population	Projected Population
Deer	8000 (Spring, Summer, Fall) 10,000 (Winter)	10,700 (Spring, Summer, Fall) 12,000 (Winter)
Antelope	925 (Spring, Summer, Fall) 1600 (Winter)	1300 (Spring, Summer, Fall) 2000 (Winter)
Sage Grouse	-	No Change
Wild Horses	1400	600
Burros	160	75

Habitat and
Competition for ForageMule Deer

Continued competition between livestock and deer for forbs and browse due to continuation of sheep grazing as in the past.

Fawning habitat would improve, especially in rest rotation allotments.

Continued unfavorable conditions for browse seedling establishment in the Cal Neva Winter Allotment 50 percent of deer range) as one year of rest is usually not sufficient.

Slow improvement in remaining deer habitat.

Antelope

cattle-antelope competition for spring forbs reduced on rest-rotation allotments

Remaining cattle from the Cal Neva Winter Allotment in March would reduce forb competition

Sheep-antelope competition for forbs and browse would continue

Seeding would have minor negative effect on forb availability

Seeded pasture use by livestock elements spring use of the Cal-Neve #1

Increased water availability would have beneficial impacts

Sage Grouse

Competition between cattle and sage grouse would be eliminated on meadows in rest pasture of rest-rotation systems

Competition in use pasture would remain heavy

Wild Horses

The 600 remaining horses (after removal of others) would have better habitat and more available forage provided by grazing systems.

Wild Burros

The 75 remaining burros (after removal of others) would have better habitat and more available forage provided by grazing systems.

Sensitive Habitats

Willow-Riparian

Seven miles of Smoke Creek fenced

- Exclosure would improve to good condition
- Increased Vertical habitat layering would provide more habitat niches

Twenty-three miles to remain unfenced

- Despite periodic resting, livestock concentrations would inhibit willow regeneration
- Increased diversity of understory species
- No substantial increase in willows

Semi-Wet Meadows

Increased vigor of grasses and forbs

Increased succulent vegetation for wildlife

Elimination of Cattle/Sage Grouse competition for succulent meadow vegetation in rest pasture, although continued heavy competition in use pastures.

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Issue 3: Wild Horse and Burro Movement

Fencing Smoke Creek

- may alter horse watering habits above Smoke Creek reservoir
- however, additional water sources available nearby
- may alter burro watering habit below Smoke Creek ranch
- however, minimal impacts as water gaps would be provided
- may to unknown extent restrict burro movement from Burro Mountain to Dry Valley Rim

Pasture and Allotment Division fences

- negligible overall impacts
- no herd summer and winter wild horse ranges would be divided
- some small home burro range reductions after Smoke Creek and winter range fences completed

Dry Valley Seeding would restrict 20 burros from 15,000 acres of forage if fenced. Slight impact as most burros range north of area

Issue 4: Cultural ResourcesGrazing Systems

Continuation of trampling-related livestock impacts

- breakage of surface materials
- displacement of spatial patterning
- mixture of near-surface verticle deposits
- most pronounced at water sources (livestock congregation areas)
- of National Register quality sites, districts, only Smoke Creek Petroglyph District exempted

Substantial improvement however, in impact severity

- increased plant/litter cover diminishes erosion
- reduced rate of site attrition
- continued high impact on 14 properties of National Register quality at water sources

Range Developments

Standard Operating Procedures ensure consideration of cultural values during project planning

Appropriate mitigation to be developed in consultation with

- State Historic Preservation Officer
- Advisory Council on Historic Preservation

Measures ensure concurrence with terms of:

- Section 106 of National Historic Preservation Act
- Paragraph 2 (b) of Executive Order 11593
- Protocol of 36 CFR 800
- January 14, 1980 Programmatic Memorandum of Agreement with Advisory Council on Historic Preservation

Issue 5: Wilderness

5

Five Springs

Grouped range developments would moderately/Adversely impact

- naturalness
- solitude
- unconfined recreation (to a degree)

However, overall enhancement of opportunities for primitive recreation due to:

- Better livestock distribution resulting from 5 miles of fence and 5 water developments
- Improved range condition
- Additional water for wildlife and recreation

No overall degradation of wilderness resource from maintenance of grandfathered range developments.

Poodle Mountain

No Change in naturalness or opportunity for solitude since no new range developments are proposed.

Other impacts same as for Five Springs WSA

Skedaddle Mountain

No appreciable impact on naturalness from changes in

- grazing system
- season of use
- developments (4 miles fence and spring)

Other impacts same as for five Springs WSA

Buffalo Hills

No appreciable impact on naturalness and solitude from development of one spring

Other impacts same as for five Springs WSA

Dry Valley Rim

No appreciable impact on naturalness from changes

- grazing system
- season of use
- developments, as the 4 new reservoirs, 1 spring and 3 miles pf fence would be widely scattered.

Other impacts same as for five Springs WSA

Mixie Flat

Same improvement of feeling of unconfined movement and naturalness due to 15 miles of fence along riparian habitat.

Minimal impact on naturalness from the one planned spring

Other impacts same as for five Springs WSA

Existing stocking levels would remain

Increase in hunting would slightly increase retail sales

Construction of range improvements would slightly benefit required economy

Changes in season of use and management would cause decrease cattle weight gains and reduced revenue during first grazing cycle

No significant impact on operators 1% increase in regional employment

Summary of Non-Issue Related Impacts

Soils

Overall decrease in erosion and increase in soil and water available to plants due to:

- Three percent increase in vegetation for nonconsumptive uses
- Rotation of grazing
- Resultant litter increase
- Increased soil infiltration capacity

Dry Valley Seeding's arrested wheatgrass would improve soil structure and infiltration

Compaction reduced areawide due to

- Reduction in horse and burro numbers
- Better livestock distribution due to 37 water sources and rotational grazing

Water Resources

No detectable effect on amount or quality of water available for use

- Storage of water in reservoirs would significantly increase amount of time surface water available
- Use of Best Management Practices (US EPA, 1979; USDI 1979, Nev BHP) would prevent:

- a) temperature increases
- b) sediment increases
- c) dissolved oxygen reductions
- d) waterborn pathogen increases

Threatened and Endangered Plants

Less trampling would occur to the two species involved

Elimination of spring grazing would eliminate cattle grazing impacts to Lomatium ravenii because it is seed ripe and near dormant by July 1.

Lomatium ravenii might receive some grazing use by sheep if their diet changes under the new management.

Draba douglasii is not grazed at all

6

Fisheries

Fencing will stabilize the land and shade the stream
Trout habitat condition will improve

Recreation

Increased wildlife will increase hunting opportunities

Fencing Dry Valley Seeding interrupts endures soil route

Fencing the Pine Dunes will increase its recreational
potential

Deer and Antelope hunting would increase 33%

Deer 3,700 to 5000 hunt deer
antelope 315 to 425

Motorcycle endures in Dry Valley would not be possible

Pine Dunes recreational use would increase

ALTERNATIVE B

Issue 1: Range Condition and Trend

Plant Associations

Plant associations would respond as described for the proposed action, except that recovery of many associations would be speeded by 50 percent stocking reductions.

Range Developments

Total of 137 acres disturbed
 -94 acres from fencing
 -43 acres from other developments
 Impacts would be similar to those described for the proposed action

TABLE 3-3
 Range Condition and Vegetation Production in 20 Years
 Alternative B - Decreased Livestock Use

Allotment	RANGE CONDITION (ACRES)			Production (AUMs)1/	Change from Present
	Excellent and Good	Fair	Poor		
Cal-Neva #1	88,890 (33%)	90,978 (33%)	92,699 (34%)	32,554	+ 3%
Cal-Neva #2	15,477 (29%)	16,097 (30%)	22,336 (41%)	16,758	+11%
Cal-Neva #3	52,483 (30%)	52,906 (30%)	68,975 (40%)	20,536	+11%
Spanish Springs AMP	5,176 (74%)	1,790 (26%)	20 (1%)	2,939	+23%
Spanish Springs Individual	668 (51%)	438 (33%)	206 (16%)	199	+27%
Morgan-Reynolds	834 (49%)	561 (33%)	307 (18%)	310	+27%
Shinn Peak Individual	7,594 (88%)	1,011 (12%)	0	2,241	+32%
Coldren	478 (47%)	334 (33%)	200 (20%)	62	+24%
Cal-Neva Winter Range	48,128 (39%)	40,066 (33%)	34,199 (28%)	8,239	+ 9%
TOTAL	219,728 (34%)	204,181 (32%)	218,942 (34%)	83,818	+ 9%
CHANGE FROM PRESENT	+464%	-32%	-28%		

1/ Total Available AUMs

Issue 2: Competitive Forage Demand

Projected Populations

Animal	Present Population	Projected Population
Deer	8000 (Spring, Summer, Fall) 10,000 (Winter)	12,000 (Spring, Summer, Fall) 10,700 (Winter)
Antelope	925 (Spring, Summer, Fall) 1600 (Winter)	2000 (Winter)
Sage Grouse	-	No Change
Wild Horses	1400	850
Burros	160	110

Habitat and Competition for Forage

Mule Deer

Decrease in spring and fall competition with domestic sheep
Overall increase in deer forage

Long-term improvement in fawning and winter habitat condition

More rapid improvement in rest-rotation than in deferred allotments because of greater rest

Antelope

Some impediment to movement created by 94 new miles of fence

Decrease in livestock-antelope competition for spring forbs and winter browse, especially in Cal-Neva #2 and Winter Allotments
Water developments in northern Cal-Neva #2 and southern Cal-Neva #3 would improve nearby kidding grounds due to increased water availability.

Long-term overall improvement in antelope habitat.

Sage Grouse

Grazing systems and decreased livestock use together would increase availability of succulent meadow vegetation
Long-term range condition improvement would not so reduce sagebrush that sage grouse would suffer detrimental food and cover losses.

Wild Horses

Decreased competition with Livestock due to 50% reductions
Increased available forage

Wild Burros

Decreased competition with Livestock due to 50% reductions
Increased available forage

Willow-Riparian

Fencing Smoke Creek impacts same as Alternative A

Twenty-three miles to remain unfenced

- Increased understory and willow vigor due to periodic rest/reduced livestock numbers
- Long-term willow reproduction should occur
- Benefits to wildlife from increased food and cover due to increased vertical layering

Semi-Wet Meadows

Increased vigor of grasses and forbs

Increased succulent Vegetation for wildlife

Elimination of Cattle/Sage Grouse competition for succulent meadow vegetation in rest pasture, although continued heavy competition in use pasture
Periodic grazing would prevent meadows from becoming so dense that adverse impacts on Sage Grouse would occur

Issue 3 - Wild Horse and Burro Movement

Impacts would be as described for alternative A, except that Dry Valley would not be seeded

Issue 4 - Cultural ResourcesGrazing Systems

Impacts would be same as for Alternative A, although significantly reduced in intensity due to 50 percent livestock reductions.

Range Developments

Impacts and procedures same as for Allotment A.

Issue 5 - Wilderness

Impacts would be as described for Allotment A

Issue 6 - Socio-EconomicsEconomic Conditions

\$286,000 in annual sales
\$224,000 cattle sales
\$62,000 sheep and wool sales

2% of regional sales least

No noticable impacts on regional livestock economy

Severe effect on some individual operators

6 operation substantially affected (forage supply changed by 15 percent or more)

4 highly dependent ranchers would have trouble meeting financial obligations
Probable acceleration of rate of ranch consolidation
all ranches would be operable

higher livestock weight gain would not offset herd reductions

One sheep operator would have his profits cut in half.
Both sheepmen would be able to continue in operation

Livestock Forage Allocation by Operator Category

	OPERATOR CATEGORY			
	Part-time	Small/Medium	Large	Sheep
Total AUMs obtained from Cal-Neva allotments	141	1,881	10,740	2,383
Average change from existing conditions (%)	-49	-50	-50	-50
Percent of total Cal-Neva livestock forage	1	12	71	16
Number of operators substantially affected	1	4	1	1

Livestock Operators

Profitability of Representative 200/1,000 Head Cattle Operation

<u>Operator Response</u>	<u>INCOME ABOVE CASH COSTS^{1/}</u>	
	<u>200 Head</u>	<u>1,000 Head</u>
Reduction of herd size	\$13,700	\$17,600
Rent replacement pasture	\$13,300	\$16,600
Existing Conditions	\$16,100	\$25,800

^{1/} Does not include costs such as mortgage payments, depreciation, and family labor.

Summary of Non-Issue Related Impacts

Impacts on Soils, Water Resources, Threatened and endangered plants, fisheries, and recreation would be as described for Alternative A with slightly greater rates of improvement

6

ALTERNATIVE C

Issue 1: Range Condition and Trend

General

Plant Associations

Lack of significant improvement in some associations due to

- Poor Soils
- low precipitation
- Competition with invader species
- Low Plant vigor
- Insufficient seed source

Associations with remnant climax species remain static

On overallocated allotments.

- Downward trend begun
- High Good to decline to good
- Good to decline to fair
- High Fair to decline fair
- Fair to decline to poor

On non-overallocated allotments:

- No significant change in condition and trend

Range Developments

Impacts would be similar to those described for Alternative A.

Dry Valley Seeding

Help maintain present native range condition on Cal-Neva #1 allotment by eliminating spring grazing

Range Condition and Vegetation Production in 20 Years

Allotment	RANGE CONDITION (ACRES)			Production (AUMs)/Change from Present
	Excellent and Good	Fair	Poor	
Cal-Neva #1	17,963 (6X) ^{1/}	132,370 (46X)	137,228 (48X)	33,954 ^{3/} + 4X
Cal-Neva #2	15,477 (29X)	16,097 (30X)	22,336 (41X)	14,664 - 3X
Cal-Neva #3	14,523 (8X)	57,705 (33X)	103,148 (59X)	17,885 - 3X
Spanish Springs AMP	1,562 (32X)	5,394 (77X)	30 (1X)	1,889 0
Spanish Springs Individual	0	982 (75X)	336 (25X)	162 + 3X
Morgan-Reynolds	0	414 (24X)	1,287 (76X)	205 -16X
Shinn Peak Individual	7,594 (32X)	1,011 (12X)	0	1,925 +14X
Cal-Neva Winter Range	326 (1X)	19,674 (18X)	87,393 (82X)	3,823 -42X
TOTAL	57,445 (9X)	233,647 (36X)	351,759 (55X)	74,507 - 3X
CHANGE FROM PRESENT	+47X	-22X	+16X	

^{1/} Includes 15,000 acres from Dry Valley Seeding.

^{2/} Total Available AUMs

^{3/} Includes 4,950 AUMs from Dry Valley Seeding

Specific Impacts by Allotment

Cal Neva 1

Present range condition
trend would be
maintained

Cal Neva 2

Same as Alternative A

Cal Neva 3

Turnout prior to range
readiness may de-
trimentally effect
- plant vigor
- seed production
Probably offset by
- grazing systems
- range develop-
ments

Cal Neva Winter

Grazing during critical
spring growing
period (when
plants breaking
dormancy and using
food reserves for
initial growth)
- Plant vigor
- Seed production
- Range condition

Spanish Springs AMP

Turnout prior to range
readiness may de-
trimentally effect
- plant vigor
- seed production

Shinn Peak

Same as Alternative A

Issue 2: Competitive Forage DemandProjected
Populations

Animal	Present Populations	Projected Population
Deer	8000 (Spring, Summer, Fall) 1000 (Winter)	7200 (Spring, Summer, Fall) 9000 (Winter)
Antelope	925 (Spring, Summer, Fall) 1600 (Winter)	825 (Spring, Summer, Fall) 1450 (Winter)
Sage Grouse	-	Moderate decline
Horses	1400	600
Burros	160	75

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Habitat and
Competition for Forage

Mule Deer

Increased competition for forbs and browse with livestock
 Competition extreme in following allotments, where forage overallocated by 25 percent:

- Cal Neva 3
- Spanish Springs Individual
- Morgan Reynolds
- Cal Neva Winter

General decline in fawning habitat, as most is in above allotments

- poor fawn survival

General decline in winter ranges

- Grasses less desirable when dormant
- Therefore browse overutilized

Decline in overall habitat condition to low-fair

Antelope

Severe antelope-livestock competition in Cal-Neva #3

- Especially during spring-summer
- More than offset additional available water

Severe antelope-livestock competition in Cal-Neva Winter

- Seeded pasture less desirable due to forb and browse decrease

Some movement impediment from proposed fencing

Some benefit to kidding grounds in Cal-Neva #2 and Cal-Neva #3 from water source development

Decline in overall habitat condition to low-fair

Sage Grouse

Decline in sage grouse brood rearing habitat due to decline in meadows.
 Severe competition for succulent vegetation
 Overall decline in habitat from fair to poor

Wild Horses

Sixty percent increase in livestock offset by:

- Grazing systems
- Additional water
- Better livestock distribution

Overall condition of horses should remain the same

Wild Burros

Sixty percent increase in livestock offset by:

- Grazing systems
- Additional water
- Better livestock distribution

Overall condition of burros should remain the same

5

Sensitive Habitats

Willow-Riparian

Fencing Smoke Creek impacts some as Alternative A
Twenty-three miles to remain unfenced

- Heavy livestock concentrations
- Insufficient rest
- Continued deterioration of willow-riparian areas
- No willow reproduction

Semi-Wet Meadows

Downward trend due to

- Heavy livestock concentrations
- Insufficient rest

Lowered production of succulent Vegetation

Issue 3: Wild Horse and Burro Movement

Impacts would be as described for Alternative A

Issue 4: Cultural Resources

Grazing Sysyem

Impacts would be the same as for Alternative A, although significantly increased in magnitude due to 60 percent livestock increases,
Trampling intensified
Loss of irretreivable information, especially in areas of livestock concentration

Range Developments

Impacts and procedures same as for Alternative A

Issue 5: Wilderness

Water quality, soil stability would decline
Archaeological resources would receive increased damage
wildlife population would decline
60% increase in livestock would not exceed "grandfathered" levels
Impacts do not cause unnecessary and undue impacts
all WSA's would retain wilderness suitability

Issue 6: Socio-EconomicsEconomic Conditions

- Increase in total sales would be \$343,500
 - cattle sale increase \$261,000
 - sheep sale increase 82,500
- Cattle operators could increase herd sizes
 - Forage supply of eight operators would increase substantially (more than 15 percent)
 - Limited only by availability of additional money to invest in breeding stock
 - May move livestock off more expensive forage onto planning unit
 - Substantially increased profits
- Sheep operators similarly affected
 - one substantially
 - probably slower to increase herds

Livestock Forage Allocation by Operator CategoryOPERATOR CATEGORY

	Part-Time	Small/Medium	Large	Sheep
Total AUMs obtained from Cal-Neva allotments	563	5,844	34,026	7,949
Average change from existing conditions (%)	+104	+55	+58	+66
Percent of total Cal-Neva Livestock forage	1	12	70	16
Number of operators substantially affected	3	3	2	1

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Number of operators substantially affected	3	3	2	1

Profitability of Representative 200/1,000 Head Cattle OperationINCOME ABOVE CASH COSTS^{1/}

<u>Operator Response</u>	<u>200 Head</u>	<u>1,000 Head</u>
Increase herd size	\$19,700	\$37,600
Transfer more of existing herd to Cal-Neva	\$19,100	\$35,900
Existing conditions	\$16,100	\$25,800

^{1/} Does not include costs such as mortgage payments, depreciation, and family labor.

Summary of Non-Issue Related Impacts

Soils

Increased erosion, especially on 10 to 30 degree slopes in high erosion hazard areas
Areawide, compaction would increase, infiltration rates would be reduced, cover would remain the same
In concentration areas, compaction would increase, cover would decrease, infiltration rates would remain the same

Water Resources

Impacts on water quantity same as Alternative A
Increased sedimentation due to increased erosion
Destruction of streambanks
- increase water temperature
- reduce effectiveness of flood plain
- damage to range developments
Water resources land use goal would not be met

Threatened and Endangered Plants

No impacts on Lomatium ravenii by cattle
- Seed ripe and dormant at cattle turnout
Possible impact from trailing sheep on Lomatium ravenii
No impact on Draba douglasii

Fisheries

Impacts on fisheries same as for Alternative A

Recreation

Impacts on recreation same as for Alternative A, except
- Decline in deer and antelope hunting due to decreased numbers

ALTERNATIVE D

Issue 1: Range Condition and Trend

Plant Associations

Lack of rest during critical spring growing season (especially in Cal Neva Summer and winter, and Shinn Peak allotments) resulting in poor:

- plant vigor
- seeding establishment

Poor utilization patterns

Present range trends would continue

No significant change in production

Range Condition and Vegetation Production in 20 Years

Allotment	RANGE CONDITION (ACRES)			Production (AUMs)	Change from Present
	Excellent and Good	Fair	Poor		
Hylen	0	156 (35%)	228 (65%)	32	0
Coldren	0	699 (69%)	313 (31%)	50	0
Lyle	0	74 (19%)	310 (81%)	14	0
Spanish Springs SMP	1,562 (22%)	5,286 (76%)	138 (2%)	1,889	0
Spanish Springs Individual	0	982 (75%)	336 (25%)	157	0
Morgan-Reynolds	0	1,575 (93%)	127 (7%)	244	0
Shinn Peak Individual	2,173 (45%)	2,579 (54%)	52 (1%)	1,064	0
Cal-Neva Summer Range	34,268 (7%)	224,886 (43%)	260,339 (50%)	67,709	0
Cal-Neva Winter Range	920 (1%)	59,004 (55%)	46,724 (44%)	5,785	0
TOTAL	38,923 (6%)	295,241 (46%)	308,687 (48%)	76,944	0
CHANGE FROM PRESENT	0	-2%	+2%	0	0

Issue 2: Competitive Forage Demand

Projected Populations		
Animal	Present Population	Projected Population
Deer	8000 (Spring, Summer, Fall) 10,000 (Winter)	8000 (Spring, Summer, Fall) 10,000 (Winter)
Antelope	925 (Spring, Summer, Fall) 1600 (Winter)	925 (Spring, Summer, Fall) 1600 (Winter) Slight decline 1400 160

Habitat Condition and Competition for Forage

Mule Deer

Decline in habitat condition due to livestock concentrations in following areas:

- riparian
- aspen
- semi-wet meadows
- mountain mahogany
- bitterbrush

continued forage competition

Populations remain at present levels.

Antelope

Habitat would be stable or decline slightly
Continued forage competition

Populations at current levels due to poor fawn survival

Sage Grouse

Continued severe competition with livestock for food and cover in meadows
Slow decline in numbers

Wild Horses

No significant impact

Wild Burros

No significant impact

Sensitive Habitats

Willow-Riparian

Continued decrease in size and condition due to heavy use
Habitat condition decline to poor

Semi-wet Meadows

Continued decline in condition due to livestock concentration
Sagebrush invasion due to heavy grazing of grass and forbs

Issue 3: Wild Horse and Burro MovementNo impacts on horse and burro movementIssue 4: Cultural Resources

Continued trampling of cultural sites
 - Notably trampling of the 14 of 15
 National Register sites located in
 concentration areas
 Slight increase in erosion caused damage

Issue 5: Wilderness

Minor degradation of naturalness from
 maintenance of existing projects
 Overall no unnecessary or undue degradation
 of wilderness values

Issue 6: Socio-EconomicsNo significant impactSummary of Non-Issue-Related ImpactsSoils

Continued compaction and loss
 of cover in concentration areas
 More sedimentation due to
 - accelerated erosion
 - streambank deterioration
 Areawide
 - slightly increased compaction
 - reduced infiltration rates
 - no change in cover
 Concentration Areas
 - Slightly increased compaction
 - no change in infiltration rates
 - no change in cover

Water Resources

No significant impact
 Waterquality goals would
 not be met

Threatened and Endangered
 Plants

No significant impacts

Fisheries

Continued degradation of
 streambanks would degrade
 trout habitat

Recreation

No significant impact

ALTERNATIVE E

Issue 1: RANGE CONDITION AND TREND

Plant Associations

Lack of significant improvement in some associations due to:

- Poor Soils
- Low Precipitation
- Competition with Invader Species
- Low Plant Vigor
- Insufficient Seed Source

(McLean and Tisdale, 1972)

May not attain climax due to past grazing impacts

- Improvement in plant associations with significant remnant population of desired species

General improvements in most allotments in:

- Vegetation Diversity
- Species Composition
- Vegetation Structure
- Percent Ground Cover

On all allotments:

- Low-fair range to improve to High Fair
- High Poor range to improve to Fair
- Longer for poor to progress to fair than for fair to progress to good (McLean and Tisdale, 1972)

Range Condition and Vegetation Production in 20 Years

Allotment	RANGE CONDITION (ACRES)			Production (AUMS) 1/	Change from Present
	Excellent and Good	Fair	Poor		
Hylen	107 (24X)	146 (33X)	191 (43X)	37	+16X
Coldren	478 (47X)	334 (33X)	200 (20X)	62	+24X
Lyle	51 (13X)	127 (33X)	204 (54X)	16	+14X
Spanish Springs AMP	5,230 (74X)	1,790 (26X)	20 (1X)	2,331	+23X
Spanish Springs Individual	668 (51X)	438 (33X)	206 (16X)	199	+27X
Morgan-Reynolds	1,077 (63X)	561 (33X)	64 (4X)	322	+32X
Shinn Peak Individual	3,936 (82X)	868 (18X)	0	1,474	+39X
Cal-Neva Summer Range	188,016 (36X)	160,129 (31X)	171,362 (33X)	75,871	+12X
Cal-Neva Winter Range	41,259 (39X)	34,891 (33X)	30,498 (28X)	9,353	+62X
TOTAL	240,822 (37X)	199,284 (31X)	202,745 (32X)	89,668	+17X
CHANGE FROM PRESENT	+519X	-34X	-33X		

1/ Total available AUMs.

Issue 2: Competitive Forage DemandProjected
Populations

Animal	Present Population	Projected Population
Deer	8000 (Spring, Summer, Fall) 10000 (Winter)	10,700 (Spring, Summer, Fall) 12,000 (Winter)
Antelope	925 (Spring, Summer, Fall) 1600 (Winter)	1,300 (Spring, Summer, Fall) 2,000 (Winter)
Sage Grouse	-	Slight increase, followed by decrease
Horses	1400	850
Burros	160	110

Habitat Condition and Competition for Forage

Mule Deer

Elimination of livestock would provide 20,000 pounds additional forage per year.

- However, much inform of perennial grasses-not heavily utilized by deer

Initial improvement in habitat condition

Slight long term decline in habitat condition due to:

- increased browse utilization
- loss of livestock as a means of maintaining subclimax successional stages preferred by deer
- slow long-term population decline

Antelope

Initial increase, then slow decline in population and habitat for same reasons as for Mule Deer

Sage Grouse

Initial significant population gains and improvements in habitat especially meadow brood rearing areas.

Over long term, meadows would become heavily vegetated with perennial grass species; use would decline

Wild Burros

Remaining burros would benefit from reduced competition

Wild Horses

Remaining Horses would benefit from reduced competition

Sensitive Habitats

Willow-Riparian

Significant improvement would become reestablished in most areas it had previously occupied

Semi-Wet Meadows

Significant improvement, would become reestablished in most areas it had previously occupied.

Issue 3: Wild Horse and Burro Movement

No impacts on horse and burro movement

Issue 4: Cultural Resources

Beneficial to cultural resources

- All trampling eliminated
- Erosion retarded

Issue 5: Wilderness

Wilderness suitability would be preserved, with enhancement of:

- naturalness
- opportunities for solitude
- overall wilderness character

Issue 6: Socio-EconomicsLivestock Industry

Meat and wool sales losses of \$572,000 (1979 Prices)
Cattle Sale loss \$448,000

- Three percent regional sales
- Affected operators both within and without region

Sheep and wool sale loss \$125,000

- Affected operators mainly outside region

Livestock Operators

Elimination of 25,537 AUMs used by 14 operators

Decrease in representative ranch budget return above cash costs

- Return must pay for equipment replacement (depreciation) and mortgage
- Profits considerably less than return
- Returns may be reduced to where operators unable to meet financial obligations

Recently acquired ranches more vulnerable due to:

- Inflated ranch prices
- Higher interest rates

Trend toward ranch consolidation accelerated

One large cattle rancher probably unable to continue due to

- 45 percent forage dependency on public lands
- difficulty of utilizing adjacent private land

One large sheep operator probably unable to continue due to loss of 43 percent annual forage

Profitability of Representative 200/1,000 Head Cattle Operation

<u>Operator Response</u>	<u>INCOME ABOVE CASH COSTS^{1/}</u>	
	<u>200 Head</u>	<u>1,000 Head</u>
Reduce Herd Size	\$11,200	\$9,400
Rent Pasture	\$10,600	\$7,500
Existing Condition	\$16,100	\$25,800

^{1/} Does not include costs such as mortgage payments, depreciation, and family labor.

MITIGATION

Number	Applicable Alternatives	Measures	Rationale
1	A,B,C	Turnout and pasture movement dates will be synchronized with range readiness. Phenological stage of key plant species will be monitored	Additional flexibility to allow enhanced plant vigor and range condition
2	A,B,C	Salt, mineral blocks, spring developments to be located away from spring meadows	Reduce livestock concentrations and trampling in spring meadows
3	A,B,C	At end of grazing season, fence gates will be left open	Allow greater wild horse and burro movement and reduce die-offs
4	A,C	Five percent of Dry Valley seeding will be left in native vegetation, seed mixture will contain a suitable perennial forb	Reduce loss of antelope spring forage

UNAVOIDABLE ADVERSE IMPACTS

Alternative A

175 acres of vegetation destroyed
by development construction

Willow regeneration inhibited

Minor impediments to horse and
burro movement

Minor but lasting impacts on
wilderness quality

Continued moderate degradation
of cultural resources

Alternative B

137 acres of vegetation destroyed
by development construction

Willow regeneration slightly in-
hibited

Minor impediments to horse and
burro movement

Minor but lasting impacts on wilder-
ness quality

Continued but minor degradation of
cultural resources

Annual loss of \$286,000 in meat
and wool sales

Alternative C

175 acres of vegetation destroyed
by development construction

Adverse impacts on

- plant vigor
- litter accumulation
- seedling establishment

Decline of wildlife habitat
on overallocated allot-
ments

Willow regeneration inhibited

Minor impediments to horse and
burro movement

Minor but lasting impacts on
wilderness quality

Moderate to High degradation of
cultural resources

Alternative D

Smoke Creek and wetland areas
would exceed Federal/State
water quality standards

Continued decline in range
condition/production

Continued decline of semi-wet
meadows and willow-riparian
habitat

Minor but lasting impacts on
wilderness quality

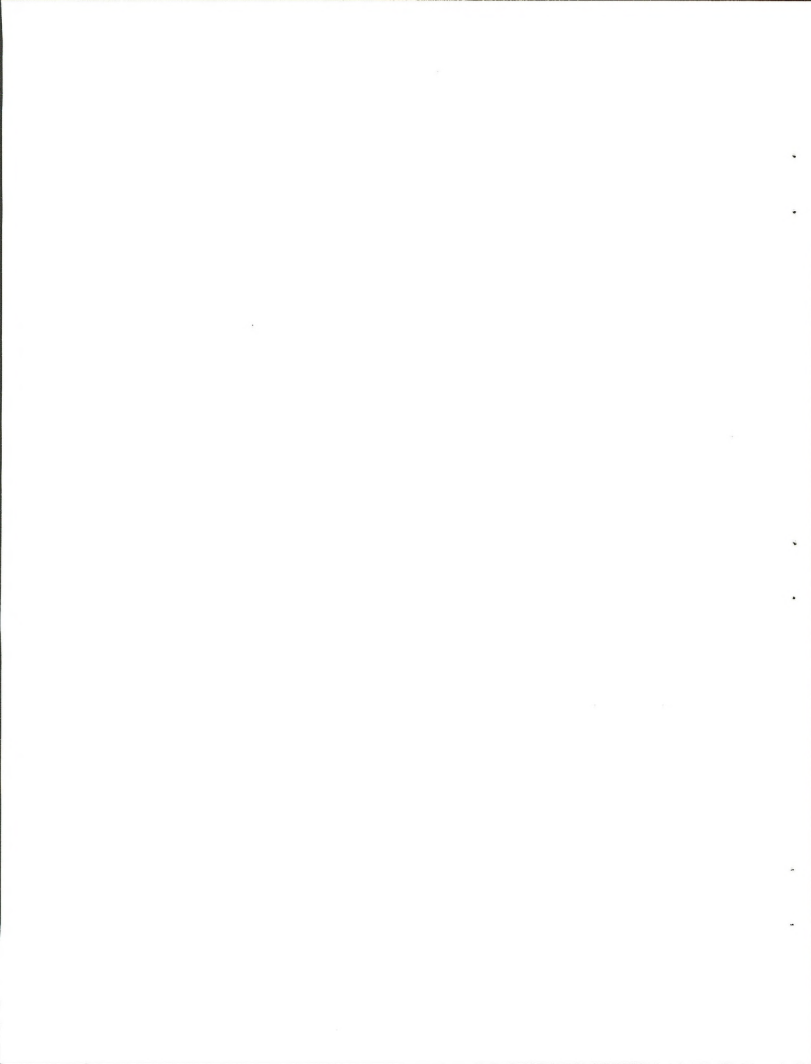
Continued moderate degradation of
cultural resources

Alternative E

Loss of \$572,000 in annual sales
of meat and wool in the region

CHAPTER 5

CONSULTATION & COORDINATION



CONSULTATION AND COORDINATION WITH OTHERS

Comments on the Draft Environmental Impact Statement will be requested from the following agencies and interest groups.

FEDERAL

Environmental Protection Agency

Advisory Council on Historic Preservation

U.S. Department of the Interior

Bureau of Mines
Heritage Conservation and Recreation Services
Water and Power Resources Service
Geological Survey
Fish and Wildlife

U.S. Department of Agriculture

Forest Service
Soil Conservation Service

Sierra Army Depot

CALIFORNIA - STATE AGENCIES

Office of the Governor

Office of Planning and Research

State Historic Preservation Office

Resource Agency

Department of Water Resources
Air Resources Board
Division of Mines and Geology
Division of Oil and Gas
Native American Heritage Commission
Department of Fish and Game
Department of Parks and Recreation
Department of Forestry

NEVADA - STATE AGENCIES

Conservation and Natural Resources Department

Environmental Protection Division
Parks Division
State Historic Preservation Office
Department of Fish and Game
State Clearinghouse

CALIFORNIA - LOCAL AGENCIES

Lassen County Board of Supervisors
Lassen County Farm Advisor (Extension Service)
Lassen County Fish and Game, and Recreation Commission
Lassen County Agriculture Commission
Lassen County Planning Commission

NEVADA - LOCAL AGENCIES

Washoe County Commissioners
Washoe County Planning and Allocation Committee
Washoe County Park and Recreation Department
Washoe County Department of Public Works
Washoe County Agriculture Extension Services

OTHER ORGANIZATIONS

Natural Resources Defense Council, Inc.
California Native Plant Society
California Conservation Council
Sierra Club
Sierra Club - Reno
California Natural Resource Federation
Northern California Planning Council
Nevada State Historical Society
American National Cattleman's Association
California Cattleman's Association
Lassen County Cattleman's Association
California Woolgrower's Association
Society for Range Management
Native American Heritage Advisory Committee
National Audubon Society
Eagle Lake Audubon
Wilderness Society - Reno
Northern California Wilderness Coalition
Centennial
Reno Gem and Mineral Society
Nevada Mining Association
Lassen County Mineral and Gem Society
Nevada Miners and Prospectors Association
Nevada Gem and Minerals

Wild Horse Organized Assistance, Inc.
International Society for Protection of Mustangs and Burro
California Association of 4-Wheel Clubs, Inc.
Nevada Outdoor Recreation Association, Inc.
Nevada Off-Road Vehicle Association
Nevada Open Land Organized Council
California Off-Road Vehicle Association,
Lassen Motorcycle Club
Hot Wheels 4 X 4 Club
Glass Mountain Four-wheelers
Lassen Organized Sportsmen
Lassen Fin and Antler Club
National Wildlife Federation
California Wildlife Federation
Nevada Wildlife Federation



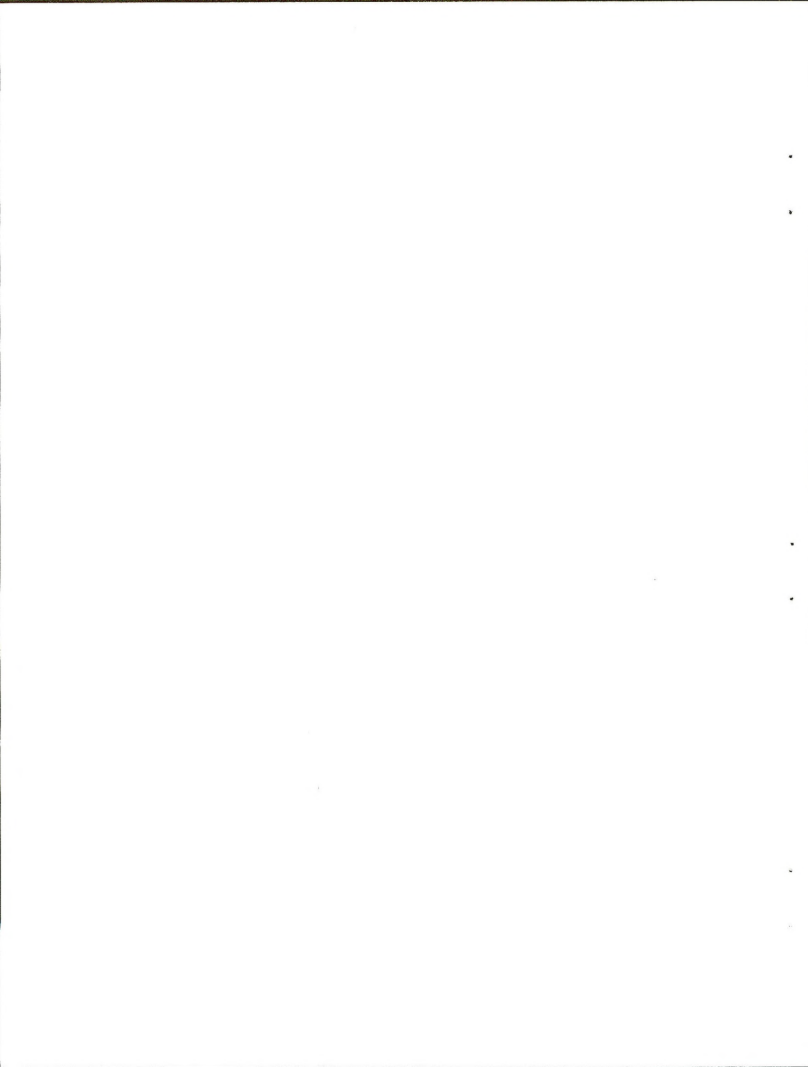
List of PREPARERS

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Dale E. Bays	Social and Economic Conditions	B.S. Forestry; State U., of N.Y. Ph.D. candidate Economics; Utah State University	BLM, 9 years; 2 years, Forester; 7 years, Economist



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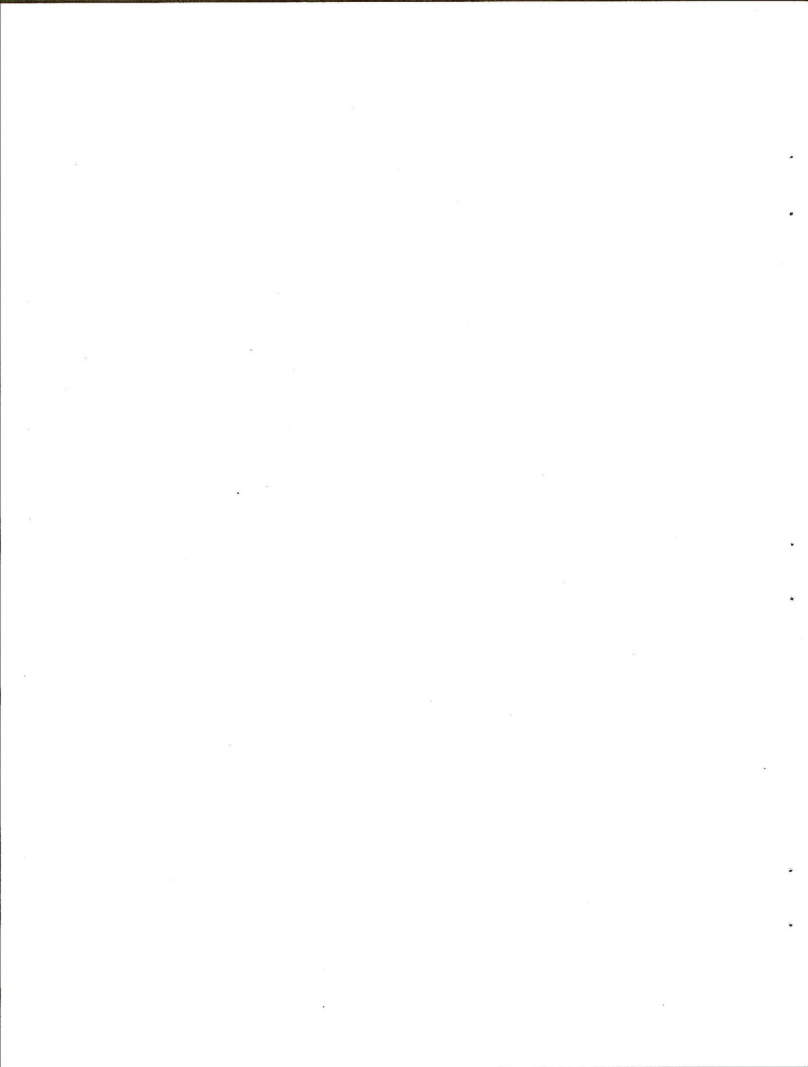
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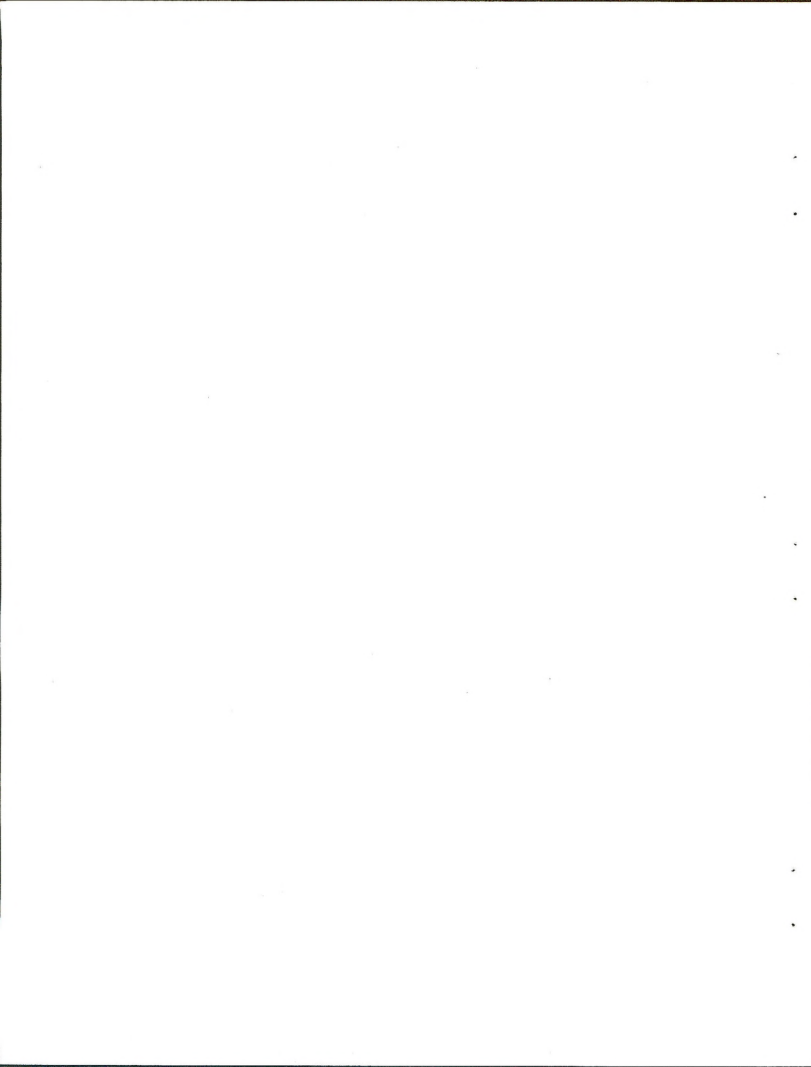
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APPENDICES



Appendix A

METHODOLOGY FOR VEGETATION INVENTORY AND FORAGE ALLOCATION, DETERMINATION OF RANGE CONDITION AND TREND, AND 20 YEAR CONDITION AND PRODUCTION PREDICTIONS

METHODOLOGY FOR VEGETATION INVENTORY AND FORAGE ALLOCATION

To determine the amount of forage available for allocation, a field inventory was conducted in the Cal-Neva Planning Unit from November, 1978, to September, 1979. All maps and data pertinent to the inventory and allocation, as well as the references mentioned in this description, are available for inspection at the Eagle Lake Resource Area Office, Susanville BLM District. The methods used for the inventory are described in detail in BLM Manual 4412.14, Soil and Vegetation Inventory Method (SVIM).

Sample unit stratification was based on a third order soil survey compiled by the Soil Conservation Service (Lassen County Soil Survey, Preliminary Data, and Washoe County Soil Survey, Central Part (771) 6/79). Soil mapping units were delineated and described in the soil survey and the potential vegetation or range site for each soil phase was apportioned by mapping unit in the Soil Survey Legend. Range sites served as the basis for determining range condition (see National Range Handbook, Soil Conservation Service, 1976). A field survey to determine range condition was conducted from November, 1978, to June, 1979. Data was recorded on Form ID-22. Each range site in a single range condition was considered a sampling strata. These strata were then sampled using the techniques described in SVIM until the vegetation data were within acceptable statistical limits. Data was collected from each SVIM transect to determine apparent trend.

Data processing was conducted by the Denver Service Center, Bureau of Land Management. All sampled plant data was corrected to a yearly maximum using data from SVIM Data forms and 1979 Cal-Neva plant phenology study. Plant production was adjusted to a medium precipitation year using a climatic adjustment factor derived from precipitation data collected at Susanville and Termo, California (see "Forecasting Range Herbage Production in Eastern Oregon", F.A. Sneva and A.N. Hyder, Station Bull. 552, Oregon State Univ., Ag. Exp. Sta., 1962)

Plant Production data was analyzed for forage allocation using a computer program developed by the Boise BLM District. An allowable use factor was applied to the production of each plant species to arrive at the total pounds of herbage that could be removed by grazing animals without affecting the viability of the plant. Herbage that could be removed by the grazing animals was designated as useable forage. A use factor was applied to a particular plant species even if it was palatable to only one animal species.

A review of literature indicated that most grass species will, depending upon the time of year, tolerate herbage removal of up to 50 percent of its annual production by weight. The literature contains little information on proper utilization of forbs and shrubs.

The following table shows use factors by plant class for perennial and annual species for use in forage allocation.

Percent Allocated Forage Using Proper Use Limits

Vegetation Class	Season-of-Use			
	Spring	Summer	Fall	Winter
Grass	30%	40%	50%	50%
Forbs	25%	25%	25%	25%
Shrubs	30%	30%	30%	30%
Sandberg Bluegrass	50%	20%	10%	10%
Cheatgrass	50%	20%	10%	10%

Use factors are lower in the spring and early summer for two reasons:

(1) defoliation of the plant anytime during the growing period is harmful to the plant and (2) production figures are based on mature weights, and plants have actually produced only a portion of their total production during this period.

The palatable annuals such as cheatgrass were given a use factor of 50 percent in any allotment with spring use, which is during the plant's peak growing season. During other periods, its use factor was lower because a high use factor would cause over utilization of desirable perennial species.

Various literature sources have used fecal analysis data to determine an animal's forage preference or dietary requirements. The following table reflects the diet composition on a properly grazed range for various ungulates.

Diet Composition (%) of Certain
Ungulates

	Spring			Summer			Fall & Winter		
	Grass	Forb	Shrub	Grass	Forb	Shrub	Grass	Forb	Shrub
Cattle	90	3	7	90	3	7	86	0	14
Horses	78	14	8	78	14	8	78	14	8
Mule Deer	35	24	41	5	50	45	8	22	70
Antelope	22	27	51	5	40	55	5	5	90
Bighorn Sheep	89	5	6	80	15	5	69	11	20
Domestic Sheep	35	37	28	35	37	28	24	1	75

The pounds of forage consumed per month by the various ungulates based on dietary composition for each season-of-use is shown below:

Forage Consumed (lbs.) by Certain Ungulates

	<u>Spring</u>			<u>Summer</u>			<u>Fall & Winter</u>			<u>Monthly Total</u>
	<u>Grass</u>	<u>Forb</u>	<u>Shrub</u>	<u>Grass</u>	<u>Forb</u>	<u>Shrub</u>	<u>Grass</u>	<u>Forb</u>	<u>Shrub</u>	
Cattle	720	24	56	720	24	56	688	0	112	800
Horses	780	140	80	780	140	80	780	140	80	1000
Mule Deer	46	31	53	7	65	58	10	29	91	130
Antelope	19	23	43	4	34	47	4	4	77	85
Bighorn Sheep	114	6	8	102	19	7	88	14	26	128
Domestic Sheep	57	60	45	57	60	45	39	2	121	162

Since allotments are grazed during different seasons or portions of different seasons, the following seasonal dates were established:

Spring	-	March 1 through June 15
Summer	-	June 16 through August 31
Fall-Winter	-	September 1 through February 28

Available forage by season was calculated by multiplying total forage by use factors. This yielded separate production figures for each mapped area. Acreage information for each mapped area was then multiplied by production figures to arrive at total available pounds of forage for each season. Automated data processing (ADP) techniques were used to make these calculations.

An example of allocation of available forage follows:

The maximum number of animals that can be grazed on an area is determined by dividing the pounds of forage produced from each plant class by the pounds of forage required per animal month for each season. The plant class which produces the least number of AUMs is then the factor limiting the number of animals that can be grazed on the allotment.

The Coldren Allotment is grazed by both cattle and deer. The following calculations are for spring use (3.5 months) only, and would also be calculated for the other two seasons.

<u>Cattle:</u>	<u>Forage Produced</u>		<u>Forage Required</u>		<u>AUMs</u>
Grass	36370	+	720	=	51
Forbs	62346	+	24	=	2598
Shrubs	98500	+	56	=	1719

This allotment could provide a maximum of 51 AUMs for cattle (14 cows during the entire 3.5 month period) during the Spring because the limiting dietary component would be grass.

<u>Deer:</u>	<u>Forage Produced</u>		<u>Forage Required</u>		<u>AUM's</u>
Grass	36370	+	46	=	551
Forbs	62346	+	31	=	5196
Shrubs	98500	+	53	=	1368

If this allotment was used during the entire 3.5 month spring it could support a maximum of 157 deer (551 +3.5). Grass would be limiting in the spring on this allotment for deer as well.

This method only shows maximum AUMs within a single season for a single kind of animal. The AUM figures for each species by season are not cumulative. However, since more than one season is usually involved, a weighted factor is used to determine the dietary limit. The weighted seasonal limit is calculated by multiplying the maximum AUM figure for each animal by the number of weeks in each season during the grazing period, divided by the total weeks in the grazing period.

Maximum AUMs by Season for the Coldren Allotment

<u>Cattle:</u>	<u>Spring</u>	<u>Summer</u>	<u>Fall-Winter</u>
Grass	51	47	55 ^{1/2}
Forb	2598	2598	0 ^{1/2}
Shrubs	1759	1759	879

<u>Deer:</u>			
Grass	551	11356	1897
Forb	5196	742	1685
Shrubs	1368	1563	1095

Cattle grazing period = 5/1 - 10/31
(Spring = 6 weeks, Summer = 11 weeks, Fall-Winter = 8 weeks)

$$\frac{(6x51) + (47x11) + (55x8)}{25} = 51 \text{ AUMs}$$

Maximum for this grazing period or approximately 8 cows.

Deer Grazing period = 1/1 - 12/31

$$\frac{(551x15) + (742x11) + (1059x26)}{52} = 701 \text{ AUMs}$$

Maximum for yearling Deer use or 58 deer.

1/ No dietary requirement.

Objective wildlife numbers for this allotment would be 41 deer yearlong.
Expressing deer use for the objective numbers in terms of their competition
with cattle on an AUM basis would be done as follows:

Spring:	41 deer x 3.5 months x 66 lbs. grass	$\frac{1}{\text{mo.}} = 9,471$
Summer:	41 deer x 2.5 months x 3 lbs. grass	$\text{mo.} = 308$
Fall-Winter:	41 deer x 6 months x 20 lbs. grass	$\text{mo.} = 4,920$
		$\frac{14,699 \text{ lbs. grass}}{\text{consumed by deer.}}$

14,699

$\frac{720}{720} = 21$ cattle AUMs of grass consumed by Deer (Competitive AUMs).
This leaves 30 AUMs available for allocation to livestock.

A final check was made to assure that no plant class was over-allocated.

	GRASS	FORAGE FORBS	SHRUBS
TOTAL AVAILABLE	36,670	62,346	98,500
CATTLE USE	17,280	384	1,792
DEER USE	14,699	19,434	39,667
<u>UNSUITABLE</u>	<u>3,115</u>	<u>8,259</u>	<u>5,984</u>
REMAINING	1,576	34,269	51,057

1,576

$\frac{720}{720} = 2$ AUMs Remaining

1/ Dietary requirement.

DETERMINATION OF RANGE CONDITION AND TREND

In order to group vegetation so that sampling could predict current and future production, a sample stratification process was conducted (see Vegetation Inventory and Forage Allocation section of this appendix). This stratification was based on range sites provided by an Order Three Soil Survey. These range sites provided a guide to the potential plant community for each particular soil. Range sites also served as a guide for determining range conditions as defined in the Soil Conservation Service National Range Handbook (1976):

"Range condition is the present state of vegetation of a range site in relation to the climax (natural potential) plant community for that site. It is an expression of the relative degree to which the kinds, proportions, and amounts of plants in a plant community resemble that of the climax plant community for the site. Range condition is basically an ecological rating of the plant community."

For the purpose of inventory, a range site in a corresponding condition class (i.e., sampling stratum) provided a reasonably consistent plant community from which data could be collected and to which data could be extrapolated. For management, this method of grouping vegetation can:

"...provide a basis for predicting the extent and direction of changes that can result in the plant community because of specific treatment or management." (S.C.S. National Range Handbook, 1976.)

In the field, the present plant community was compared to the climax plant community as described in the range condition guide for the range site. For the existing plant community, the maximum percentage of total production shown for each plant species in the range site guide was the maximum percentage that was counted for a condition rating. The amount of all climax species not in excess of that shown on the guide was totaled to indicate the relative ecological rating or numerical evaluation of the stand. The rating was between 0 and 100, depending on how closely the plant community resembled the climax plant community for the range site.

Four classes were used to express the degree to which the composition of the present plant community reflected that of the climax. They are:

<u>Range Condition Class</u>	<u>Percentage of Present Plant Community That is Climax for the Range Site</u>
Excellent	76-100
Good	51-75
Fair	26-50
Poor	0-25

In the process of stratification, several plant associations became apparent which regularly occurred on similar range sites in specific range condition classes (Daubenmire, 1968).

Apparent trend was determined from data collected from each SVIM transect (FIGURE A-1).

TWENTY YEAR CONDITION AND PRODUCTION PREDICTIONS

Methods for determining existing range condition and production were described in earlier sections of this appendix. Production estimates were based on production plot samples for all the range sites. Range sites were then grouped into representative plant associations by condition class, so that the plant associations represent range sites in a particular condition class. As range condition classes change, corresponding plant associations also change. Each plant association in a particular condition class has a certain production potential. TABLE 2-3 shows the plant associations and the typical range condition class they represent. The production data was then averaged for each plant association to arrive at a production estimate by plant association.

Assumptions were made for each alternative in order to predict changes in range condition over the next 20 years for that alternative. These assumptions are discussed with each alternative in Chapter 3. The 20 year condition predictions were then used to calculate production predictions for each plant association by allotment.

An example of the production calculation procedure follows:

The Western juniper/Sagebrush plant association comprises 458 acres in one allotment, represents range sites in poor range condition, and has a present estimated production of 9 acres/AUM. With the improved livestock management proposed under the proposed action, the assumption was made that one-third of this poor condition range (153 acres, representing high poor condition), would improve to fair condition in 20 years, while the remaining two-thirds (305 acres) would remain in poor condition.

To obtain the production prediction for that poor condition range in 20 years, the new acreage for poor condition range (305 acres) was divided by the present production estimate (9 acres/AUM) to give the predicted future production (34 AUMs).

The same range sites in fair range condition are represented by the Big sagebrush/Squirreltail plant association. There are currently 1,243 acres of this plant association in the allotment.

Another assumption for the proposed action was that two-thirds of the existing fair condition range (829 acres) would progress to good condition in 20 years, with the other one-third (414 acres, representing low fair condition) remaining in fair condition.

To obtain the production prediction for fair condition range in 20 years, the one-third remaining in fair condition (414 acres) was added to the one-third improving from poor condition (153 acres). The total fair condition acreage (567 acres) was divided by the present production estimate for fair condition range (7.5 acres/AUM) to give the predicted future production (76 AUMs).

The same range sites in good range condition are represented by the Big sagebrush/Bluebunch wheatgrass association. There is currently none of this plant association in the allotment.

The fair condition range that progressed to good condition (829 acres) was added to the existing good condition range (none in this example). The total good condition acreage (829 acres) was divided by the present production estimate for good condition (5 acres/AUM) to obtain the predicted future production (166 AUMs).

Production and condition predictions were then totaled for all plant associations in the allotment to obtain predictions for the entire allotment.

Appendix B

DETERMINATION OF CURRENT, REASONABLE AND OBJECTIVE MULE DEER AND PRONGHORN ANTELOPE NUMBERS

CURRENT AND REASONABLE MULE DEER NUMBERS (NEVADA)

Current deer population in the Nevada portion of the planning unit was determined by projecting population levels from harvest data, using the modified Seleck-Hart formula (Tsukamoto, 1977). These numbers were averaged for the 15-year period of 1961 through 1975. The average is considered to be a "reasonable number" of deer to manage for.

CURRENT AND OBJECTIVE MULE DEER NUMBERS (CALIFORNIA)

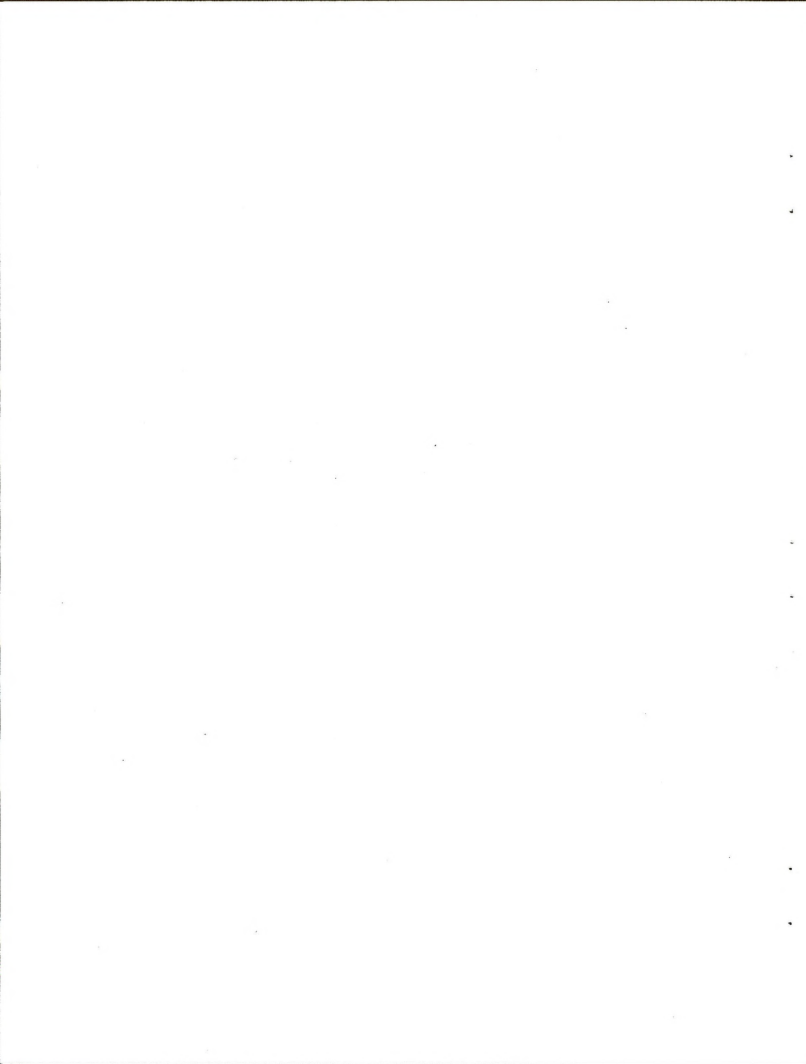
Current deer populations in the California portion of the planning unit were determined by using pre- and post-season composition counts and a change in ratio formula (Pyshora, 1979). Population figures for the years 1963 through 1976 were analyzed and a determination made that 1965 population levels would be the objective numbers (Conrad, 1977). However, a population model is presently being developed for the East Lassen Deer Herd, the results of which may change the objective numbers for the planning unit.

CURRENT AND REASONABLE PRONGHORN ANTELOPE NUMBERS (NEVADA)

Current antelope population levels for the Nevada portion of the planning unit were determined by projecting population levels from annual aerial census data, assuming 50 to 55 percent of the population is observed during an aerial survey. The current numbers were then expanded by 50 percent to arrive at reasonable numbers.

CURRENT AND OBJECTIVE PRONGHORN ANTELOPE NUMBERS (CALIFORNIA)

The current antelope population estimate for the California portion of the planning unit was determined from aerial surveys. The current numbers were then expanded by 25 percent to arrive at the objective numbers. However, the California Department of Fish and Game is presently working on a pronghorn antelope herd plan and objective numbers may change, depending upon the recommendations of the plan (Pyshora, 1980).



Appendix C

CULTURAL RESOURCE SURVEYS: METHODS, RESULTS

I. CULTURAL RESOURCE DATA BASE

Information on cultural resources in the Cal-Neva Planning Unit has been synthesized from the following sources: 1) An existing data inventory (literature and archival search) conducted by BLM cultural resources staff; 2) Excavation reports documenting research conducted within and adjacent to the study area (Riddell 1957, 1960; Fenenga and Riddell 1949); 3) Published ethnographic accounts (Riddell and Evans 1978); 4) Historical documentation (Amesbury 1964, 1967; Middleton 1963; Fam's and Smith 1882; Fairfield 1916); 5) BLM's 1976 survey of cultural resources in the Wendel-Amedee geothermal leasing area (USDI 1978); 6) A stratified, random sample of 6.11 percent of the public lands in the study area, conducted by BLM cultural resources staff in 1979; 7) BLM-initiated inventory of 42,240 acres proposed for potential vegetative manipulation; 8) Integration of various project-specific surveys initiated by BLM and other agencies (Cal-Trans, California State Lands Commission) in compliance with the terms of 36 CFR 800; and 9) Consultation with representatives of the local Native American Community.

In addition, the study has benefited from extrapolation of data collected in adjacent study areas. Particularly, anthropological and historical overviews (Theodoratus 1979; Roberts 1980) as well as the reports of BLM surveys (USDI 1979, 1980; Corson and Smith 1979; Corson n.d.; Roney 1978) have contributed to an understanding of the prehistory and history of the study area.

II. BLM 1979 SURVEYS: ASSUMPTIONS AND METHODS

Lacking a regionally adequate predictive model of site distribution on which to base land use recommendations, and because existing data (insomuch as they were available at all for the planning unit) stressed chronological correlations and had been selected on intuitive or project-related grounds, BLM initiated in the field season of 1979 a survey campaign intended to yield data sufficient to predict the kinds, numbers, and locations of archaeological sites throughout the Cal-Neva area.

A. Research Design and Goals

Although legislative mandates prescribe the inventory and evaluation of all cultural resources which might be affected by the decision making process, this clearly was impossible given budgetary constraints, short time schedules, and the large area involved. Accordingly, selective reconnaissance was adopted, structured to return the maximum data in a short period of time. Two independent strategies were employed:

1. In order to characterize the kinds, numbers, and distribution of archaeological sites throughout the planning unit, a stratified, random sample of 6.11 percent of the public lands in Cal-Neva was surveyed intensively in square-mile (section) sampling units. The stratification of the sample involved three semi-independent variables: landform, proximity to water, and dominant vegetation (reflecting an approach usefully employed in the Eagle Lake Basin survey; see Corson and Smith, 1979). Each potential sampling unit was characterized by landform categories of predominantly steep (greater than 10%) or predominantly gradual slope, by hydrologic categories determined by the presence or absence (within the unit) of perennial water sources, and into five shrub classes including big sage, low sage, juniper, salt desert shrub, and mountain shrub. Proportional fractions were drawn from each of the strata by a random numeric procedure; combinations of stratification elements resulted in slight under- or over-representation of certain complex strata, as reflected in TABLE H-1. Sixty-three (63) square miles were surveyed as a result of this selection (see TABLE 2-13 for a comparison of acreages and percentages of all survey efforts).
2. To anticipate the nature and degree of cultural conflicts with proposed vegetative manipulation, and to test the predictive model generated by the sampling described above, approximately 30,000 acres of land proposed for seeding (including the 15,000 acre Dry Valley Seeding) was surveyed intensively for cultural resources.

B. Survey Methodology

All surveys were conducted on foot, by survey parties ranging in size from two to five persons trained in site recognition and recording. The surveyors, spaced a maximum of 100 meters apart, advanced along a front using topographic maps, hand-held compasses and, in some instances, aerial photography as geographic controls.

While adherence to 100 meter corridors ensured a measure of objectivity in the scrutiny of each sample unit (in that all major portions of the unit were assured of being entered), experience, intuition, and common sense were allowed to dictate deflections from purely geometric lines of advance. Thus, each team member was free to meander through his 100 meter corridor in order to inspect erosional features, islands of intrusive vegetation, minor topographic features such as saddles and benches, unanticipated minor water sources, and basaltic rims and overhangs.

Each survey unit was recorded in the field (irrespective of whether or not sites had been detected within it) in a standard format which notes the unit's physiographic, hydrologic, and biotic characteristics.

Upon the recognition of a site (a 10 flake minimum was taken to define open sites), its size, boundaries, and distinctive features were recorded on standard site survey forms. Site locations were plotted on USGS 7.5' or 15' maps. Isolated occurrences of artifacts (i.e., those functionally or chronologically diagnostic artifacts not directly associated with recognized sites) were recorded, but site numbers were not assigned. Site record sheets have been filed in the District Archaeological Site Catalogue, while locational data have been entered in the District Archaeological Atlas. This data has been forwarded to the California State University Clearinghouse in Chico, California (for sites in California) and to the Nevada State Museum (for sites in Nevada) for the assignment of permanent site numbers in the respective statewide systems.

Collection of field specimens was limited strictly to items necessary for analysis of findings or to those items ostensibly in danger of vandalism if left in the field. Chronologically diagnostic specimens (in isolation or in association with recognized sites) were collected routinely. Functionally diagnostic specimens (or a sample thereof) were collected from sites known to be subject to vandalism. All specimens collected will be donated to the appropriate repository (either CSU, Chico, or the Nevada State Museum) for professional curation.

III. RESULTS OF BLM SURVEYS

The 1979 field work resulted in the recording of 329 previously unknown archaeological sites, 179 of which fell within the stratified random sample. At present, then, including the results of previous independent surveys as well as BLM project related investigation, 381 sites are known to lie within Cal-Neva. While 9.43 percent of the public lands in the planning unit have been intensively scrutinized, only 6.11 percent was surveyed in a manner suitable for predicting site occurrence. The sample detected an average density of 2.84 archaeological sites per square mile throughout Cal-Neva; or an estimated 2,927 sites lying on public lands within the planning unit.

A. Types of Sites

Eleven site categories were recognized during the 1979 multiple strategy surveys. These categories reflect functional definitions based upon the frequency of occurrence of recognizable artifact types, internal spatial patterning, and location. Most sites, however, lack the chronological indicators in their surface configurations which would allow them to be placed in a regional time frame. Thus, the assignment of site categories in one respect obscures several millennia of cultural evolution and social differences by forcing them into a static interpretive model. Particularly, the role of environmental change (and in the Great Basin, climatic changes especially) escapes recognition where cultural time markers

(such as projectile points) are not available through surface survey. A site which in times of abundant moisture served as a major upland base camp might, when hotter times dried up the water source, serve only as an ephemeral stopping place for the shortest seasonal visits, or might be abandoned entirely.

1. Villages: These sites constituted long-term central places in the seasonal round; they were reused year after year, and the duration of their occupation in most years was lengthy. Because it seems likely that most were occupied in winter, when several hunting/foraging groups coalesced, they probably represent the traces of the largest population clusters within the planning unit. Such sites are represented by large, dense surface scatters of cultural material with abundant lithic debitage, chipped stone artifacts (e.g., projectile points, knives, scrapers) related to hunting and the preparation of animal foods and byproducts, and ground stone artifacts (manos and metates, mortars and pestles). Related stone technologies are often present, signalled by drills, awls, "choppers", scraper planes, cores, artifact "rough-outs", and utilized flakes. Villages customarily have been reoccupied sufficiently to develop significant vertical deposits, and generally display pronounced midden components.
2. Base Camps: In mid-to-upland settings, often above the season-long winter snow line, but always in close association with reliable waters, occur several large occupation sites with complex, multi-functional artifact assemblages. The pursuit of both plant and animal foods is indicated, and the duration and apparent frequency of reuse of such sites suggests that, however much the exploitation of specific resources may have changed over the course of millennia, these places remained intrinsically attractive for upland settlement (at least for the seasonal collection of food plants and the staging of hunting forays). Many have been reoccupied often enough to develop vertical deposits, and pronounced midden components are evident at some.

Sites of this category are often smaller than villages, and the density of cultural materials which they display is less pronounced. Milling stones, while always present, are far less abundant, and vertical deposits slighter.

3. Temporary Camp: Dense concentrations of chipped stone artifacts and lithic debitage are often found around springs and seeps and at the confluence of seasonal drainages, throughout the mid-ranges and uplands, in all topographic settings and through the full spectrum of habitat types. Such sites show strong orientations toward hunting and the initial preparation (e.g., butchering) of animal foods and animal products. Milling stones are virtually always absent from the assemblages, and there seldom are indications of subsurface deposits (save those accountable to natural soil processes).

4. Stone Sources/Quarries: High quality raw lithic materials are not abundant or evenly distributed throughout the planning unit. Obsidian is apparently absent as a resource throughout the southern two-thirds of Cal-Neva, though natural deposits of nodules are known (and were exploited prehistorically) in the north. Likewise, deposits of cryptocrystalline cherts, though infrequent, were material sources. Fine grained basalts formed the most abundant useable stone in Cal-Neva, and they were the most used. Basalt sources range from small, sparsely used deposits of nodules to vast fields comprising primary quarry workshops (in one instance covering over 100 acres).

5. Caves/Rockshelters

Natural cavities and overhangs are common in the hilly regions and canyonlands of the planning unit and most (over 80 percent of those investigated) contained cultural materials. Their principal attraction was shelter, and consequently they display assemblages characteristic of various categories of open sites (one cave/quarry has even been recorded). What marks them as unique and enhances their significance is that they often shelter from deteriorating forces the organic materials (including artifacts as well as faunal and floral components) which seldom are preserved in open sites.

6. Petroglyph Localities

Aboriginal designs pecked or scratched into the patinated surfaces of soft lava boulders and rims are frequent throughout the planning unit. Over 95 percent of these designs face east, a regularity commensurate with a more widely distributed Great Basin pattern. Virtually all consist of geometric abstract designs, though a very small number of representational elements depict human stick figures and animals. Such sites occur customarily in association with springs, at upland temporary camps and base camps, and along ridges above game trails. They exhibit a very wide range in extent and intensity, from single designs on isolated boulders to vast "galleries" of panels, each with multiple elements, extending for more than a mile.

7. Hunting Stations

One of the most abundant site types in the planning unit consists of small, very light density lithic scatters on ridge crests, the brinks of rims, knoll tops, and small benches above drainages. Their distribution and their internal constituency suggest that they are directly related to the aboriginal hunting of ungulates (Corson, 1977a), especially sheep and deer. They apparently functioned variously as lookouts, ambushes, kill sites, and preliminary butchering sites.

8. Hunting Blinds

Functionally related to hunting stations, and sharing their general patterns of distribution, is a much smaller group of sites consisting of small (6'-10') constructions, chiefly slightly crescentic walls, of piled stone. Throughout California and the Great Basin such structures have been interpreted as blinds or ambushes for the hunt. They occur in association with light lithic scatters, though they may be devoid of other cultural material.

9. Milling Stations

A few isolated milling stones (specifically manos and/or metates) have been located on grass-rich flats and slopes, and in lake margin dune complexes. Clearly they represent low intensity efforts in plant collecting and preliminary foodstuff preparation; each probably falls within the ambit of a nearby village or base camp in lower settings, or near an upland temporary camp at higher elevations. Such sites often have an associated lithic scatter, minimal in extent and of the sparsest density.

10. Lithic Scatters

A very large residual category of open site, characterized chiefly by scatters of varying density of lithic debitage, presently defies assignment to one or another specific functional class. While the abundance of lithic material at such sites may often be relatively dense, they exhibit few definable artifact types and do not occur in those environmental settings (such as on ridgecrests or in proximity to water) which are partially diagnostic of certain functions. While in most cases both the reason and the era of their use are beyond the abilities of surface survey to define, both kinds of information could yield to intense scrutiny (including excavation and laboratory analysis).

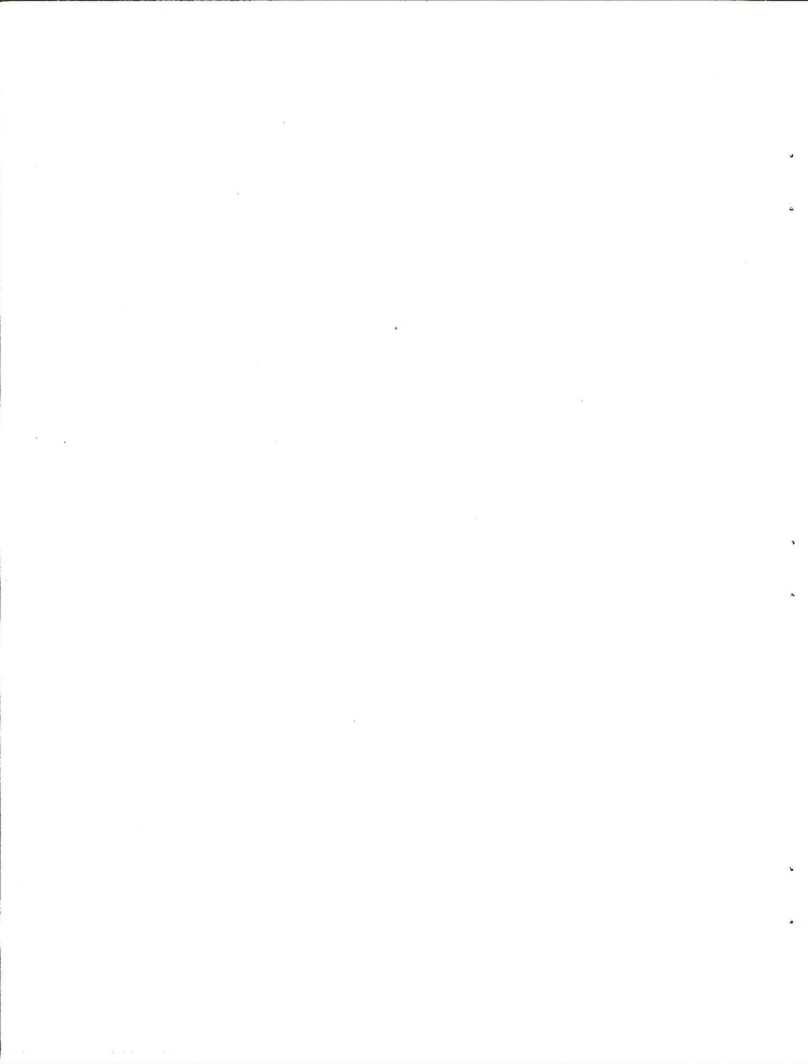
11. Limited Activity Areas

The most ephemeral category of site identified consists of single millings: in association with fugitive lithic assemblages not exceeding ten flakes. Owing to the uniform occurrence of plant food preparation equipment (though in modest quantity) we infer that these sites generally reflect women's activities.

B. Predictive Model of Site Location

On the basis of sampling independently the environmental attributes of slope, proximity to water, and vegetation, it becomes possible to extrapolate to the unsurveyed 90 percent of the planning unit a pattern of site occurrence reflecting what has already been discovered.

Cross stratification of the various attributes (2 of slope, 2 of water, 5 of vegetation) yields 20 ways of discriminating the Cal-Neva landscape, all but two of which (steep slopes/away from water/salt desert shrub and steep slopes/near water/salt desert shrub) are realized on the ground. Within these smaller and more specific strata, archaeological sites exhibit a markedly unequal privilege of occurrence. This is reflected in TABLES H-2 and H-3 depicting, respectively, the distribution of site-types throughout the sample strata and the site densities observed in each of the strata. Examination particularly of TABLE H-3 conveys our best knowledge of the probable distribution of sites in the entire planning unit. It should be noted that the highest site density (8.5/square mile) occurs in the stratum 'gradual slope/near water/big sage.' Relatively high densities (5 sites/square mile) occur also in the strata 'gradual slope/away from water/salt desert shrub' and 'gradual slope/near water/juniper.' All other strata exhibit densities lower than 3.5 sites/square mile, with the average density for the planning unit as a whole equalling 2.48 sites/square mile.



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